

Colorado

Water Supply Outlook Report

May 1, 2017



After 26 years of enthusiastically measuring the snowpack along the Front Range, from Rocky Mountain National Park to the far reaches of the Poudre Canyon, John Fusaro spent his last day with the NRCS measuring the Cameron Pass snow course. John and fellow surveyors encountered lovely April weather and measured an average of 63 inches of snow depth and 24.6 inches of snow water equivalent along the course, which is 91 percent of the median for May 1st. We congratulate John on his retirement, but his commitment to Colorado Snow Survey and the NRCS will be sorely missed.

Contents

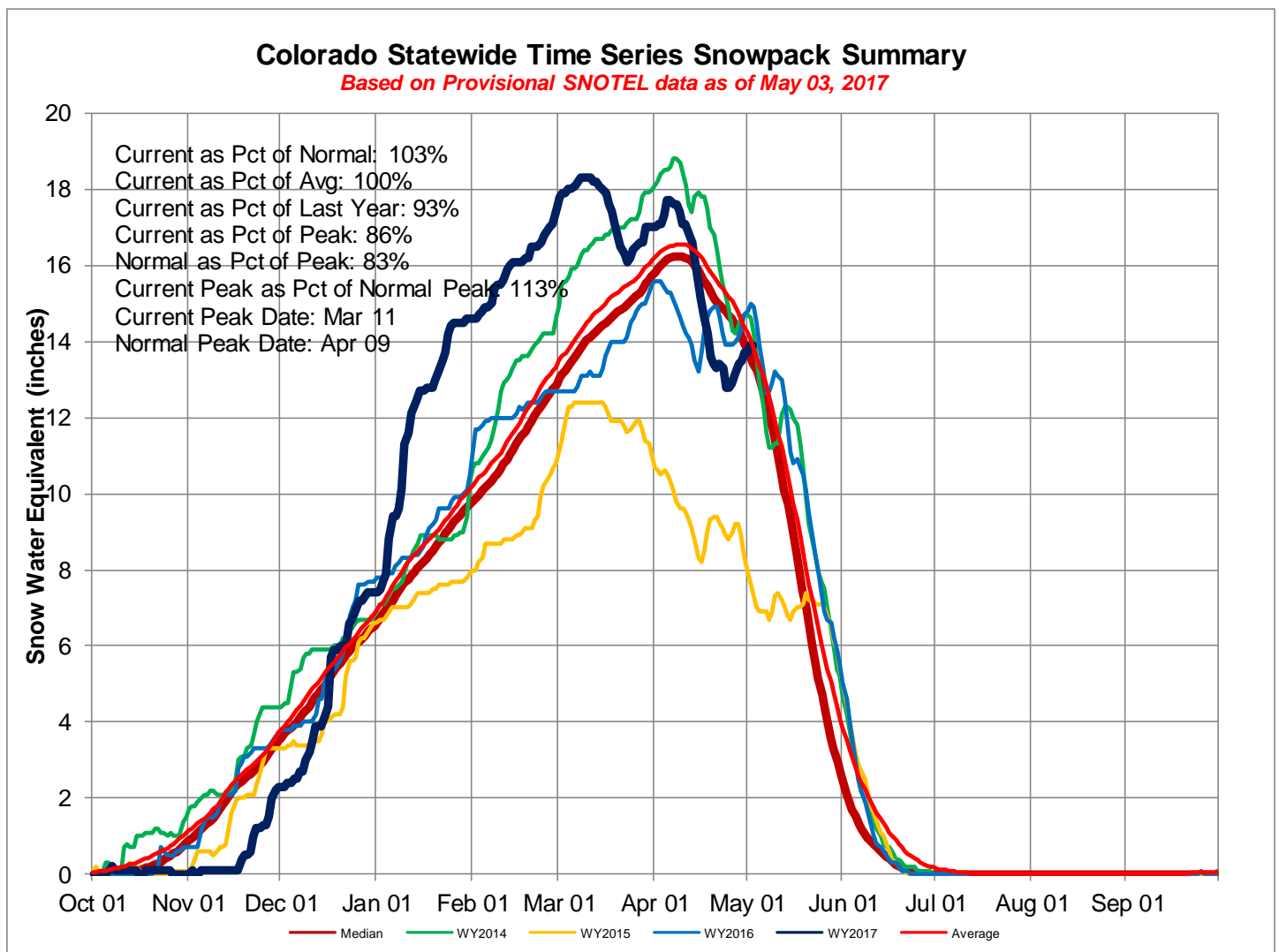
Statewide Water Supply Conditions	3
Summary.....	3
Snowpack.....	4
Precipitation	4
Reservoir Storage	6
Streamflow	7
GUNNISON RIVER BASIN.....	9
UPPER COLORADO RIVER BASIN.....	13
SOUTH PLATTE RIVER BASIN	17
YAMPA, WHITE, NORTH PLATTE AND LARAMIE RIVER BASINS.....	21
ARKANSAS RIVER BASIN.....	25
UPPER RIO GRANDE RIVER BASIN	29
SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS	33
How to Read Non-Exceedance Projections Graphs.....	37
Explanation of Flow Comparison Charts.....	38
How Forecasts Are Made.....	39

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers. If you believe you experienced discrimination when obtaining services from USDA, participating in a USDA program, or participating in a program that receives financial assistance from USDA, you may file a complaint with USDA. Information about how to file a discrimination complaint is available from the Office of the Assistant Secretary for Civil Rights. USDA prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex (including genderidentity and expression), marital status, familial status, parental status, religion, sexual orientation, political beliefs, genetic information, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) To file a complaint of discrimination, complete, sign, and mail a program discrimination complaint form, available at any USDA office location or online at www.ascr.usda.gov, or write to: USDA Office of the Assistant Secretary for Civil Rights 1400 Independence Avenue, SW. Washington, DC 20250-9410. Or call toll free at (866) 632-9992 (voice) to obtain additional information, the appropriate office or to request documents. Individuals who are deaf, hard of hearing, or have speech disabilities may contact USDA through the Federal Relay service at (800) 877-8339 or (800) 845-6136 (in Spanish). USDA is an equal opportunity provider, employer, and lender. Persons with disabilities who require alternative means for communication of program information (e.g., Braille, large print, audiotope, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

Statewide Water Supply Conditions

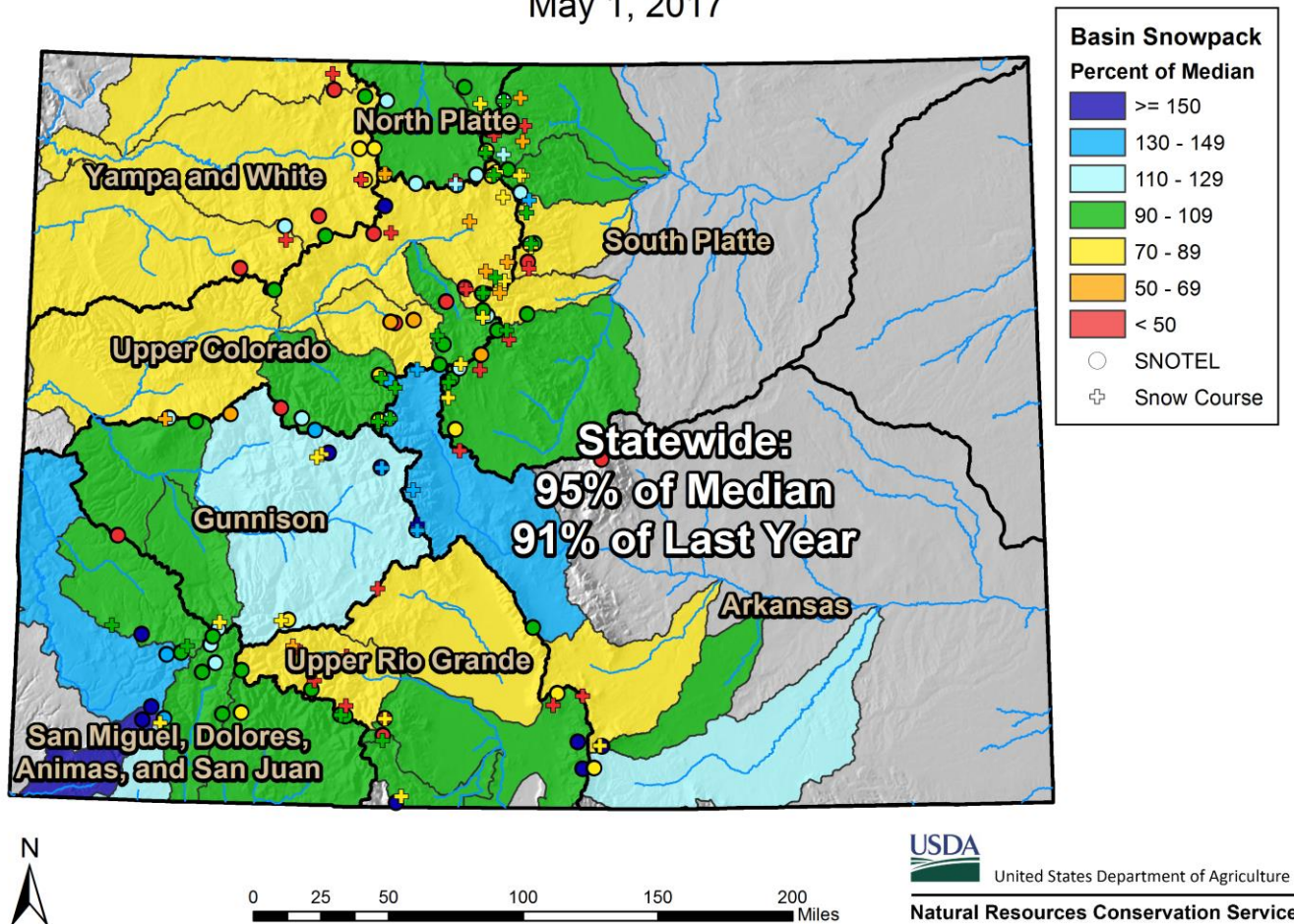
Summary

As snowpack continues to melt, Colorado can begin to recap the 2017 snowpack accumulation season. The southern half of the state received over 120 percent of the typical snowpack peak. Northern basins saw lesser peaks this year - yet all still decent - with only the North Platte Basin peaking below the normal value. Nearly all areas of Colorado experienced varying amounts of resurgence in snowpack accumulation at the end of April. Fortunately the North and South Platte River basins have experienced little melt so far this season and while within reach of achieving new snowpack peaks, it is unlikely with weather forecasts showing dry conditions in the near-term forecasts. In general, the snowpack contribution to water supply should be respectable across the state. Unfortunately spring precipitation through the two most pivotal months has fallen short of normal accumulations. Statewide, March and April produced only 76 percent of average precipitation. Warm, dry spring conditions often cause snowpack to sublimate, further decreasing streamflows and Colorado water supply. After impressive midwinter snowpack numbers dwindled this spring, streamflow forecast projections have returned to normal values ranging the 70 percent to 140 percent of normal with a few outliers on each end. Colorado reservoirs remain at strong levels poised for what has so far shaped up to be a dry spring.



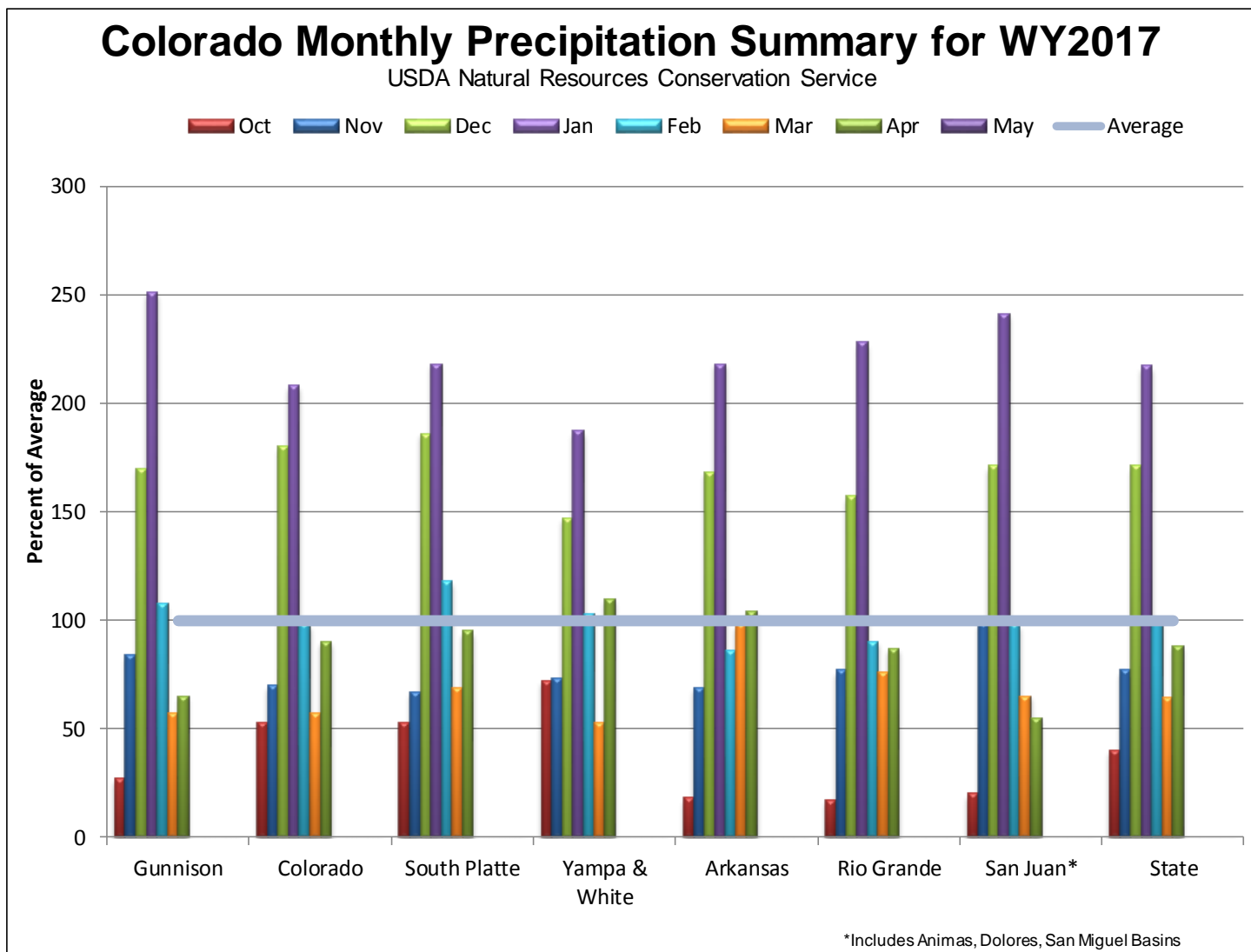
Snowpack

Colorado Monthly Snowpack Summary May 1, 2017



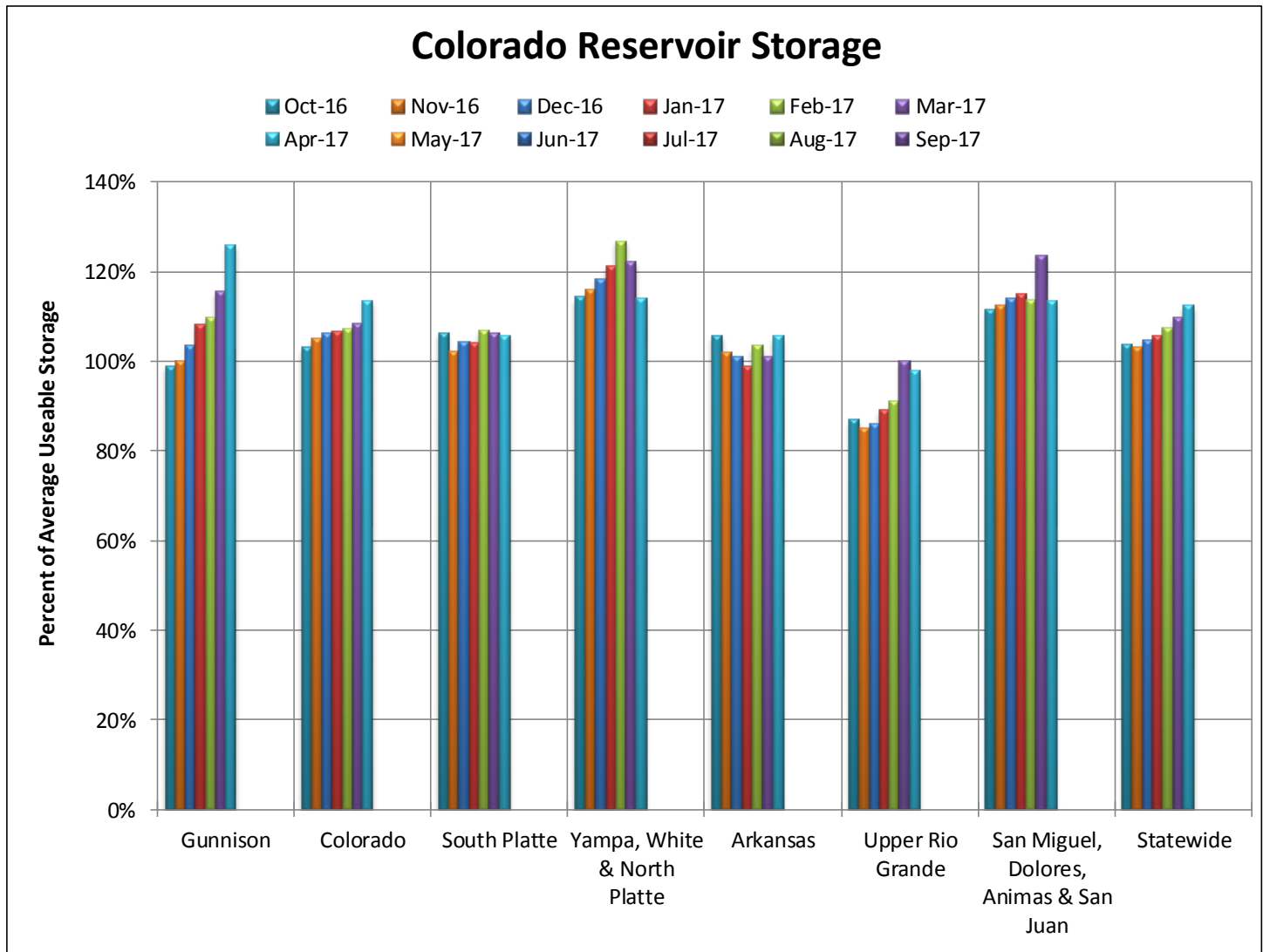
After a snowy start to the month, much of April was characterized by rapid snowmelt across Colorado, especially at SNOTEL sites located at low and mid elevations. Although snowpack peaks in the major river basins ranged from normal to much above normal, the snowpack across most of the state began to melt up to a month earlier than normal, and occurred at a faster rate than is typical. Many low elevation sites melted completely prior to the end of the month. This rapid melt led the snowpack in all of the major basins to drop to below normal levels prior to the last week of the month. However, much like March, a switch to a cooler and more active weather pattern at the end of April stalled snowmelt, contributed accumulations to the snowpack at many SNOTEL sites, and allowed most of the major river basins to see improvements in the percent of normal snowpack. On May 1, the combined Yampa and White River basins and the Upper Rio Grande River basin now have the lowest snowpack with respect to normal at 81 and 88 percent of the median respectively. The Colorado and South Platte River basins are also below normal, both at 93 percent of the median, while the North Platte is at 97 percent of the median. As a result of snowpack gains received at the end of April, the Gunnison, combined San Miguel, Dolores, Animas, and San Juan River basins, as well as the Arkansas River basin all returned to above normal levels and are at 108, 109, and 115 percent of median respectively. Collectively, Colorado's snowpack is now slightly below normal at 95 percent of the median.

Precipitation



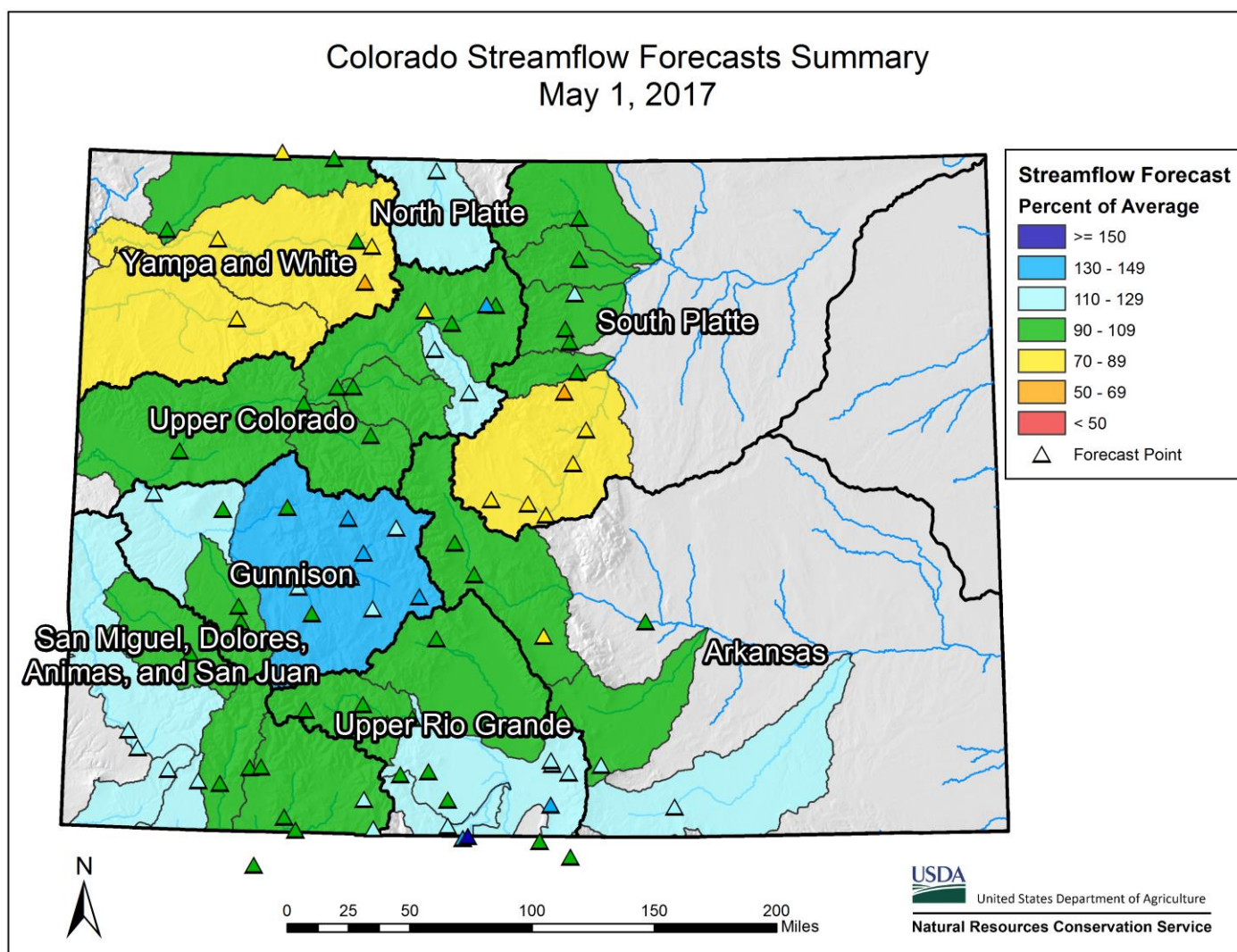
Although an improvement over March, April was another dry month for Colorado's mountains. Only two of the major river basins received above normal precipitation for the month, with the main reprieve to the lack of moisture occurring during the last week of April. Most of the state received monthly precipitation ranging from only 55 to 95 percent of average. The combined Yampa, White, and North Platte River basins received the most precipitation with respect to normal, with accumulations at 110 percent of average. The Arkansas River basin also had another good month and received 104 percent of average accumulations. The South Platte River basin received 93 percent of average April precipitation and the Colorado and Upper Rio Grande River basins received 90 and 86 percent of average respectively. The Gunnison and combined San Miguel, Dolores, Animas, and San Juan River basins had another paltry month and respectively only received 66 and 55 percent of average precipitation. Statewide precipitation was 88 percent of average for the month. Despite two consecutive dry months, all of the major river basins remain above normal for water year-to-date precipitation, and range from 104 to 113 percent of average. These high numbers hinge mostly on the exceptional precipitation that occurred during December and January. Of the seven months that have passed so far this water year, four have had monthly accumulations that are much below normal.

Reservoir Storage



Statewide reservoir storage increased both in volume and in percent of normal for the fifth consecutive month this water year, and is at 112 percent of average on May 1. Four of the seven major river basins also experienced increases in the percent of normal reservoir storage during April. Collectively, reservoirs in the Gunnison River basin experienced the largest increase in storage, and the basin now has the highest percent of normal reservoir storage at 126 percent of average. Reservoirs in this basin are at 77 percent of capacity, but are storing 191.6 KAF more water than is normal for the end of April. Reservoir storage decreased with respect to normal in the combined Yampa, White, and North Platte River basins as well as in the combined San Miguel, Dolores, Animas and San Juan River basins, but both regions are still above normal at 114 and 113 percent of average respectively. The Colorado River basin is also at 113 percent of average after an increase in storage over last month. Storage levels in the South Platte and Arkansas River basins are similar to last month, and both basins are at 106 percent of average. Reservoirs in the Upper Rio Grande River basin dropped to slightly below normal levels during April and are now at 98 percent of average, making this the only basin with below normal reservoir storage on May 1.

Streamflow



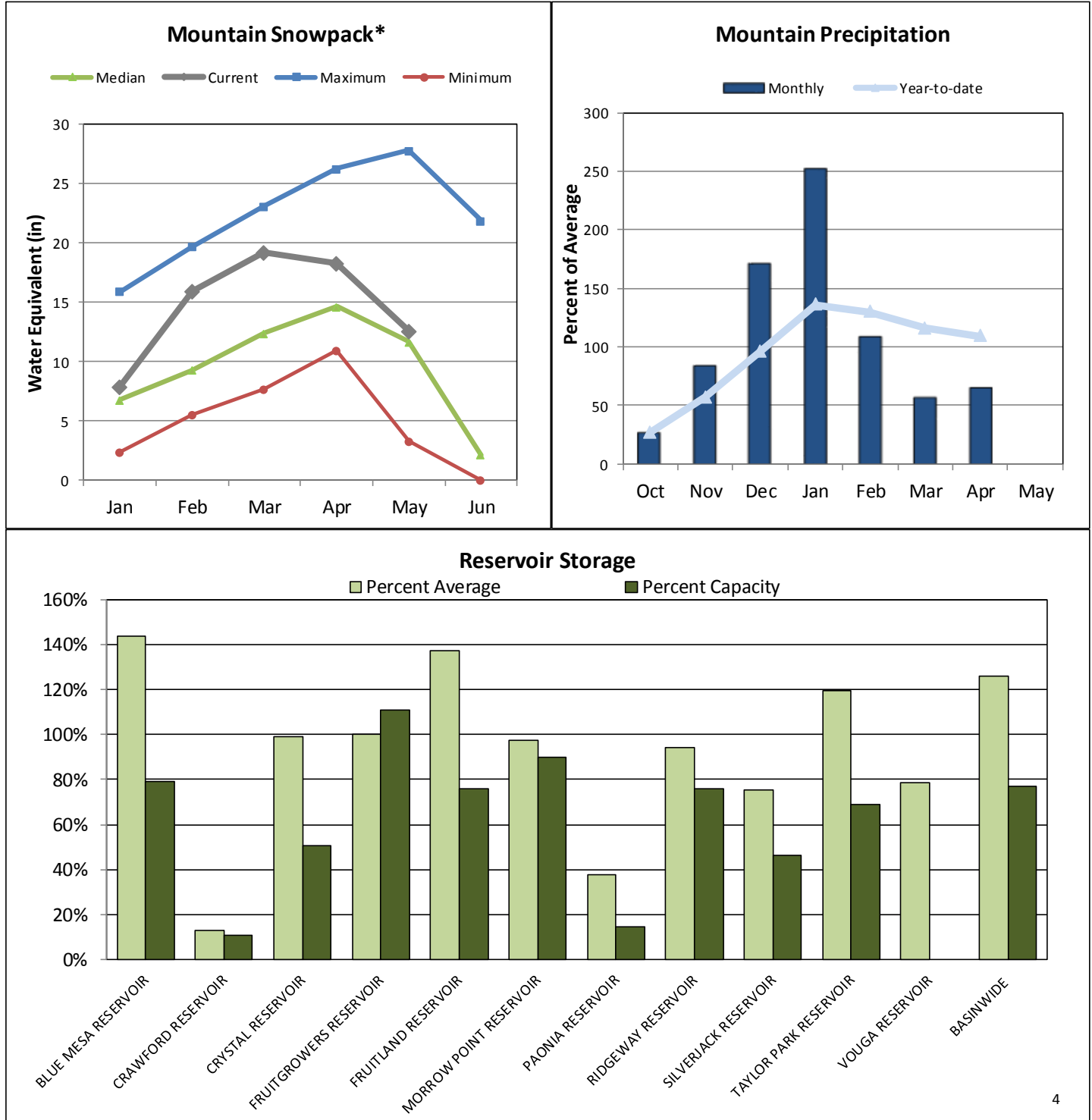
As runoff is ramping up in Colorado's streams, current streamflow forecasts are calling for volumes that are near to above normal for most of Colorado's major river basins. However, there are exceptions where precipitation is lacking and much of the contributing snowpack has already melted. In general, the southern half of Colorado has a better streamflow outlook than the northern half of the state, with streamflow forecasts being particularly elevated in the Gunnison River basin. Here, all but two forecast points, the inflow to Paonia Reservoir and Surface Creek at Cedaredge, are projected to have above normal flows, and Tomichi Creek and the upper Gunnison forecast points are projected to have flows above 130 percent of average. Streamflow volumes in the Upper Rio Grande and combined San Miguel, Dolores, Animas, and San Juan River basins are also expected to be mostly above normal, ranging from 93 to 154 percent of average. Streamflow forecasts for tributaries in the Colorado and Arkansas River basins are near to above normal, ranging from 90 to 138 percent of average, with a few lower forecasts for points in each basin. Summer runoff is predicted to be above normal, at 112 percent of average on the North Platte River in Colorado, but except for a few sub-basins, many forecast points in the South Platte and combined Yampa and White River basins are expected to be below normal. The St. Vrain, Big Thompson, and Boulder Creek sub-basins are forecast to be between 102 and 111 percent of average, but other forecasts in these basins range from 66 to 98 percent of average. As we've seen in past years, these forecasts can still change with spring precipitation playing a large role in runoff, especially in the river basins east of the Continental Divide.

PAGE INTENTIONALLY LEFT BLANK

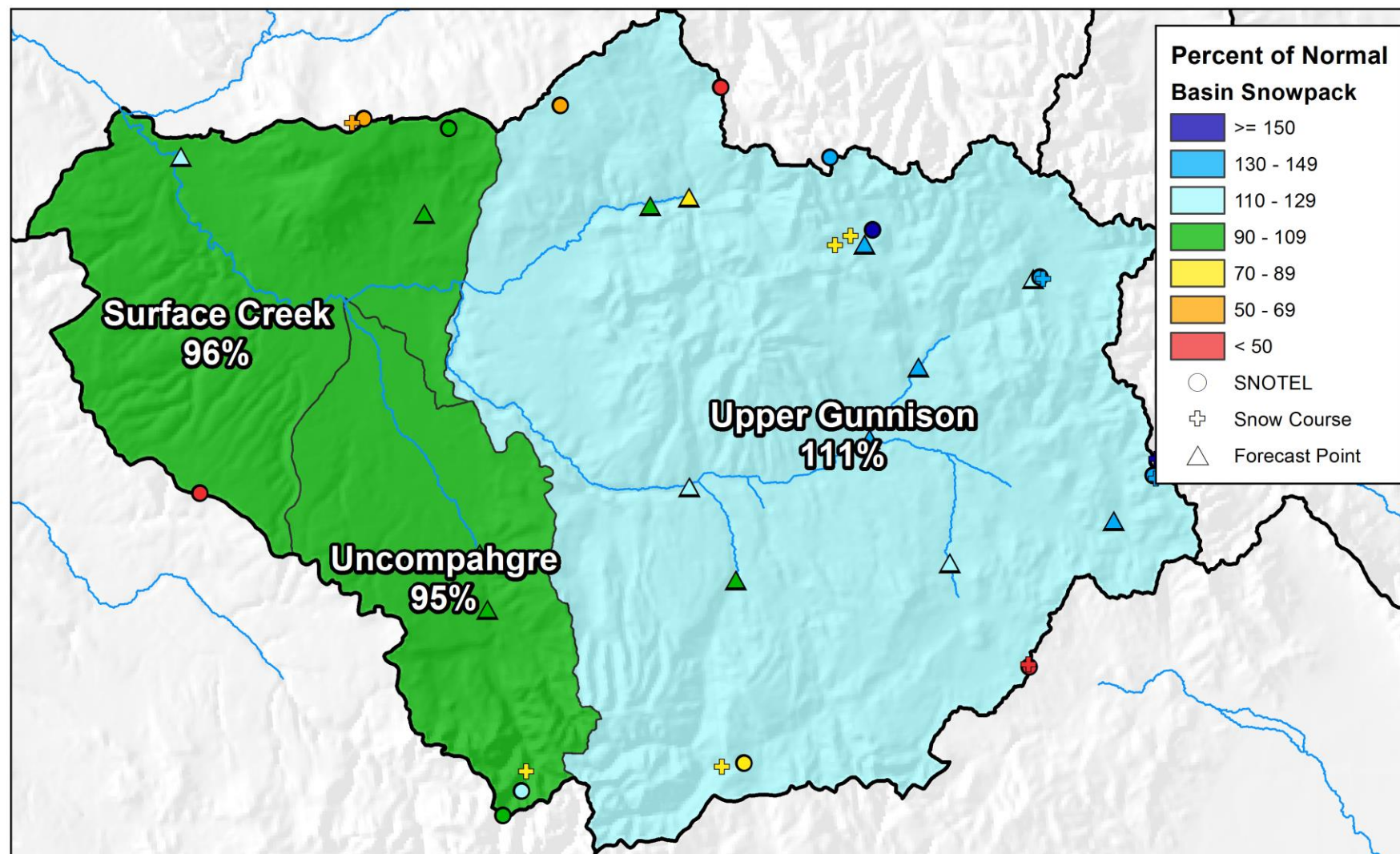
GUNNISON RIVER BASIN

May 1, 2017

Snowpack in the Gunnison River basin is above normal at 108% of the median. Precipitation for April was 66% of average which brings water year-to-date precipitation down to 109% of average. Reservoir storage at the end of April was 126% of average compared to 117% last year. Current streamflow forecasts range from 143% of average for Tomichi Creek at Sargents to 79% for the inflow to Paonia Reservoir.



Gunnison River Basin Snowpack and Streamflow Forecasts May 1, 2017



0 5 10 20 30 40 Miles



United States Department of Agriculture
Natural Resources Conservation Service

Gunnison River Basin Streamflow Forecasts - May 1, 2017

 Forecast Exceedance Probabilities for Risk Assessment
 Chance that actual volume will exceed forecast

GUNNISON RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Taylor Park Reservoir Inflow	APR-JUL	101	114	123	124%	133	147	99
	MAY-JUL	88	101	110	122%	120	134	90
Slate R nr Crested Butte	APR-JUL	97	104	110	133%	115	124	83
	MAY-JUL	82	89	95	128%	100	109	74
East R at Almont	APR-JUL	220	235	245	135%	260	275	182
	MAY-JUL	187	200	210	127%	225	240	166
Gunnison R near Gunnison ²	APR-JUL	420	465	495	134%	525	575	370
	MAY-JUL	345	390	420	125%	450	500	335
Tomichi Ck at Sargents	APR-JUL	31	38	43	143%	48	57	30
	MAY-JUL	22	29	34	131%	39	48	26
Cochetopa Ck bl Rock Ck nr Parlin	APR-JUL	10.8	14.3	17.2	115%	20	26	15
	MAY-JUL	6.3	9.8	12.7	107%	15.9	21	11.9
Tomichi Ck at Gunnison	APR-JUL	71	88	102	138%	117	141	74
	MAY-JUL	44	61	75	121%	90	114	62
Lake Fk at Gateview	APR-JUL	110	121	130	106%	139	152	123
	MAY-JUL	97	108	117	101%	126	139	116
Blue Mesa Reservoir Inflow ²	APR-JUL	745	820	870	129%	925	1000	675
	MAY-JUL	600	675	725	121%	780	860	600
Paonia Reservoir Inflow	MAR-JUN	66	75	82	85%	89	101	96
	APR-JUL	58	69	77	79%	86	100	97
	MAY-JUN	36	45	52	75%	59	71	69
	MAY-JUL	38	49	57	76%	66	80	75
NF Gunnison R nr Somerset ²	APR-JUL	250	275	295	102%	315	345	290
	MAY-JUL	184	210	230	96%	250	280	240
Surface Ck at Cedaredge	APR-JUL	13.8	15.3	16.4	98%	17.5	19.3	16.8
	MAY-JUL	10.2	11.7	12.8	91%	13.9	15.7	14.1
Ridgway Reservoir Inflow	APR-JUL	92	103	110	109%	119	131	101
	MAY-JUL	80	91	98	108%	107	119	91
Uncompahgre R at Colona ²	APR-JUL	111	130	144	105%	159	182	137
	MAY-JUL	92	111	125	104%	140	163	120
Gunnison R nr Grand Junction ²	APR-JUL	1380	1540	1670	113%	1790	1990	1480
	MAY-JUL	1060	1220	1350	109%	1470	1670	1240

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

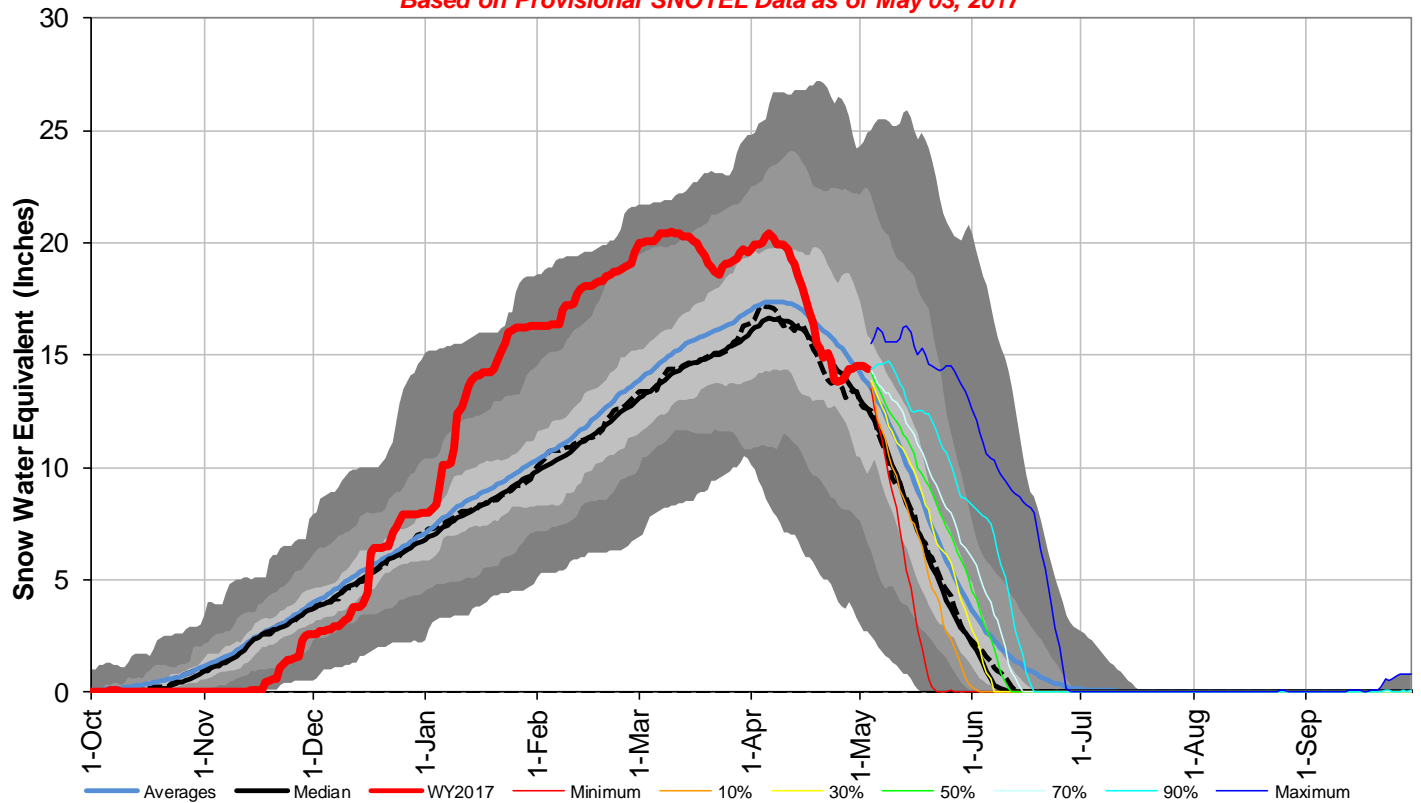
3) Median value used in place of average

Reservoir Storage End of April, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Blue Mesa Reservoir	657.7	570.7	457.1	830.0
Crawford Reservoir	1.5	13.7	11.8	14.0
Crystal Reservoir	8.9	8.8	9.0	17.5
Fruitgrowers Reservoir	4.0	3.5	4.0	3.6
Fruitland Reservoir	7.0	7.5	5.1	9.2
Morrow Point Reservoir	108.8	111.1	111.8	121.0
Paonia Reservoir	2.2	3.2	5.8	15.4
Ridgway Reservoir	62.9	68.0	66.6	83.0
Silverjack Reservoir	5.9	7.1	7.8	12.8
Taylor Park Reservoir	73.2	71.0	61.2	106.0
Vouga Reservoir	0.7	0.8	0.9	0.9
Basin-wide Total	932.7	865.3	741.1	1213.4
# of reservoirs	11	11	11	11

Watershed Snowpack Analysis May 1, 2017	# of Sites	% Median	Last Year % Median
UPPER GUNNISON BASIN	18	111%	98%
SURFACE CREEK BASIN	3	96%	108%
UNCOMPAHGRE BASIN	4	95%	106%
GUNNISON RIVER BASIN	22	108%	99%

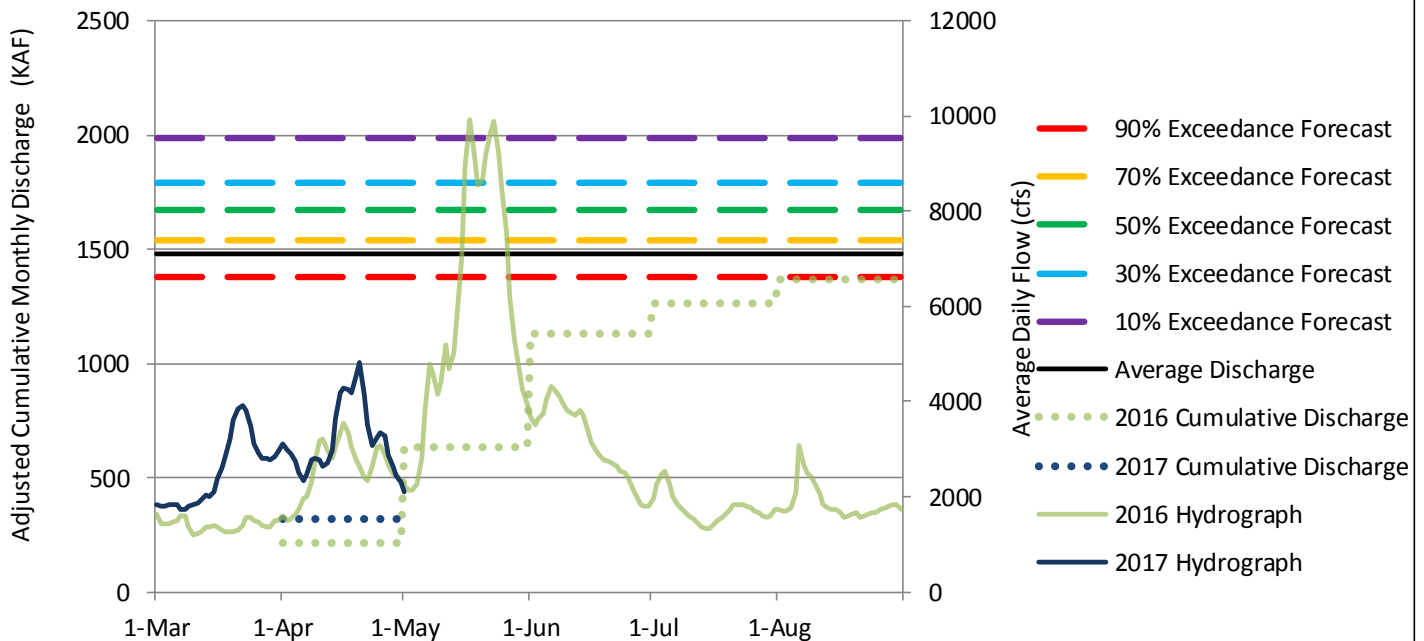
Gunnison River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of May 03, 2017



Gunnison River near Grand Junction, CO

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

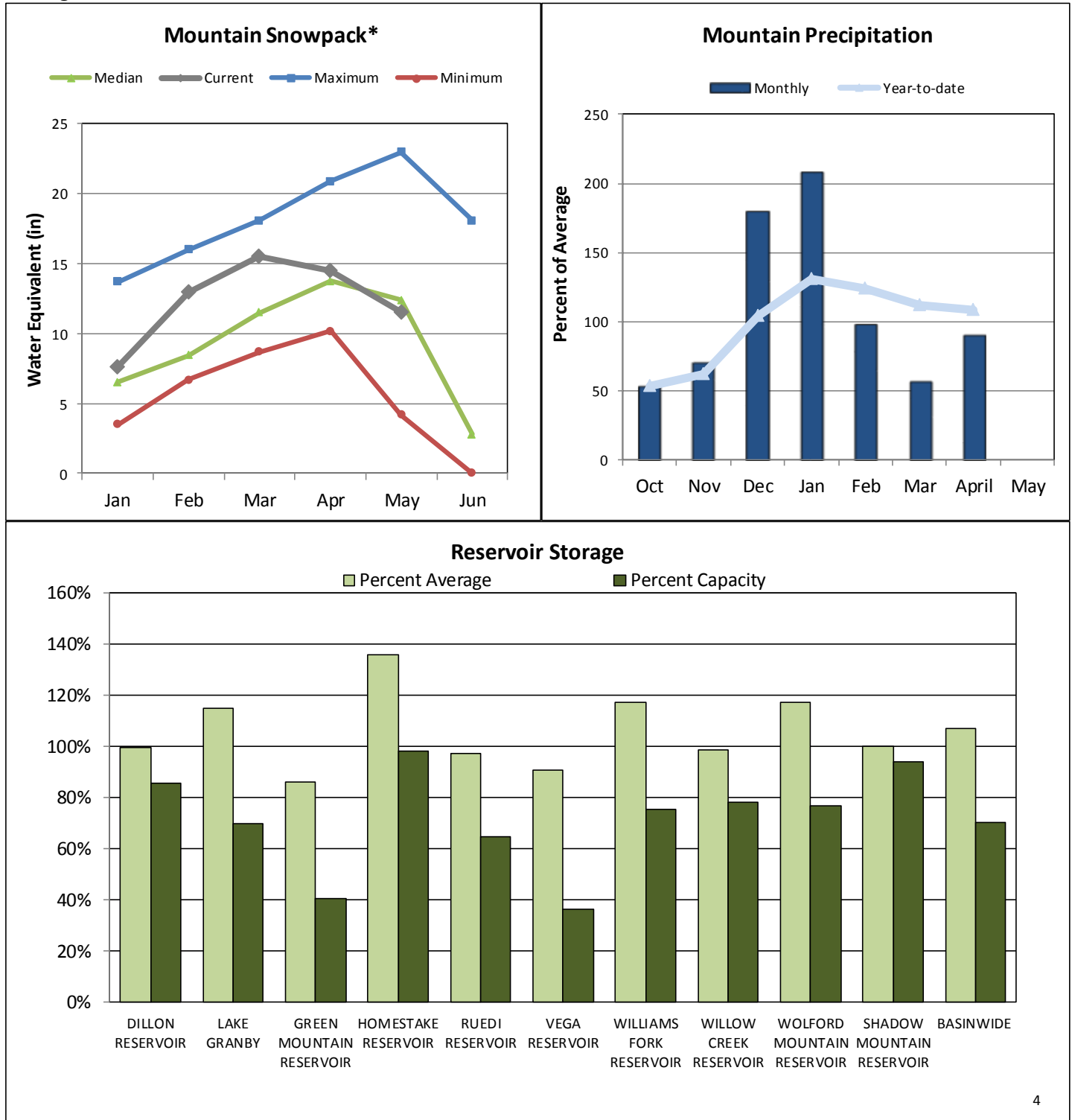


Please refer to the sections at the end of this report for further explanation concerning these graphs.

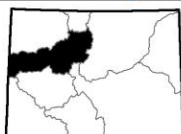
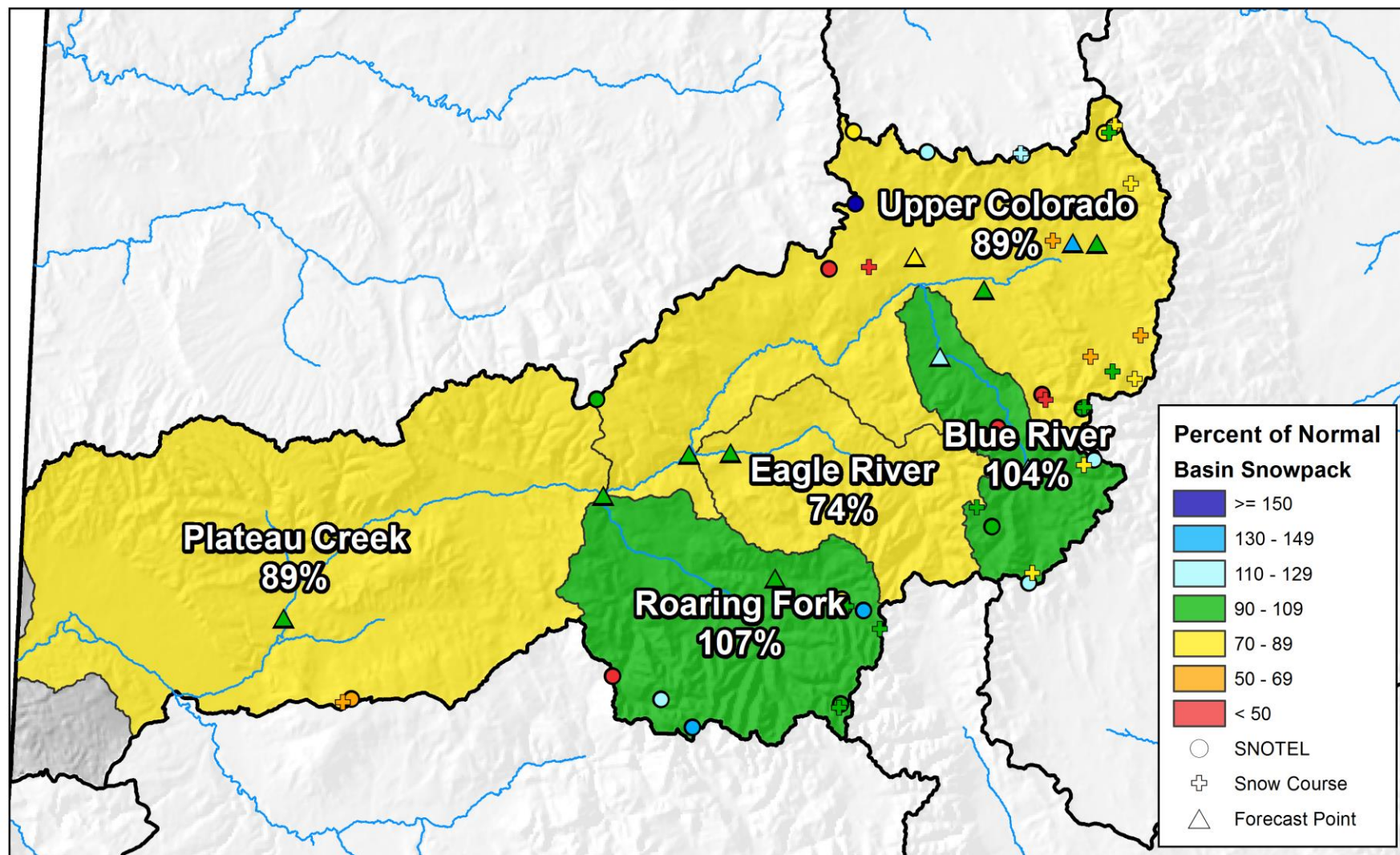
UPPER COLORADO RIVER BASIN

May 1, 2017

Snowpack in the Colorado River basin is below normal at 93% of the median. Precipitation for April was 90% of average which brings water year-to-date precipitation down to 108% of average. Reservoir storage at the end of April was 113% of average compared to 115% last year. Current streamflow forecasts range from 138% of average for the inflow to Willow Creek Reservoir to 74% for the Wolford Mountain Reservoir inflow.



Upper Colorado River Basin Snowpack and Streamflow Forecasts May 1, 2017



0 5 10 20 30 40
Miles



United States Department of Agriculture

Natural Resources Conservation Service

Upper Colorado River Basin Streamflow Forecasts - May 1, 2017

 Forecast Exceedance Probabilities for Risk Assessment
 Chance that actual volume will exceed forecast

UPPER COLORADO RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Lake Granby Inflow ²	APR-JUL	190	210	225	102%	240	265	220
	MAY-JUL	164	185	200	98%	215	240	205
Willow Ck Reservoir Inflow	APR-JUL	50	59	65	138%	72	83	47
	MAY-JUL	35	44	50	116%	57	68	43
Williams Fk bl Williams Fk Reservoir ²	APR-JUL	84	96	105	108%	114	128	97
	MAY-JUL	77	89	98	109%	107	121	90
Wolford Mtn Reservoir Inflow	APR-JUL	31	36	40	74%	45	52	54
	MAY-JUL	21	26	30	65%	35	42	46
Dillon Reservoir Inflow ²	APR-JUL	159	177	190	117%	205	225	163
	MAY-JUL	139	157	170	111%	184	205	153
Green Mountain Reservoir Inflow ²	APR-JUL	255	285	310	113%	335	375	275
	MAY-JUL	220	250	275	108%	300	340	255
Eagle R bl Gypsum ²	APR-JUL	245	280	310	93%	340	385	335
	MAY-JUL	220	255	285	92%	315	360	310
Colorado R nr Dotsero ²	APR-JUL	1190	1360	1480	106%	1610	1810	1400
	MAY-JUL	1010	1180	1300	102%	1430	1630	1280
Ruedi Reservoir Inflow ²	APR-JUL	109	122	132	95%	142	158	139
	MAY-JUL	97	110	120	92%	130	146	130
Roaring Fk at Glenwood Springs ²	APR-JUL	570	635	680	99%	725	795	690
	MAY-JUL	510	575	620	97%	665	735	640
Colorado R nr Cameo ²	APR-JUL	2000	2220	2380	101%	2540	2800	2350
	MAY-JUL	1750	1970	2130	99%	2290	2550	2150

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

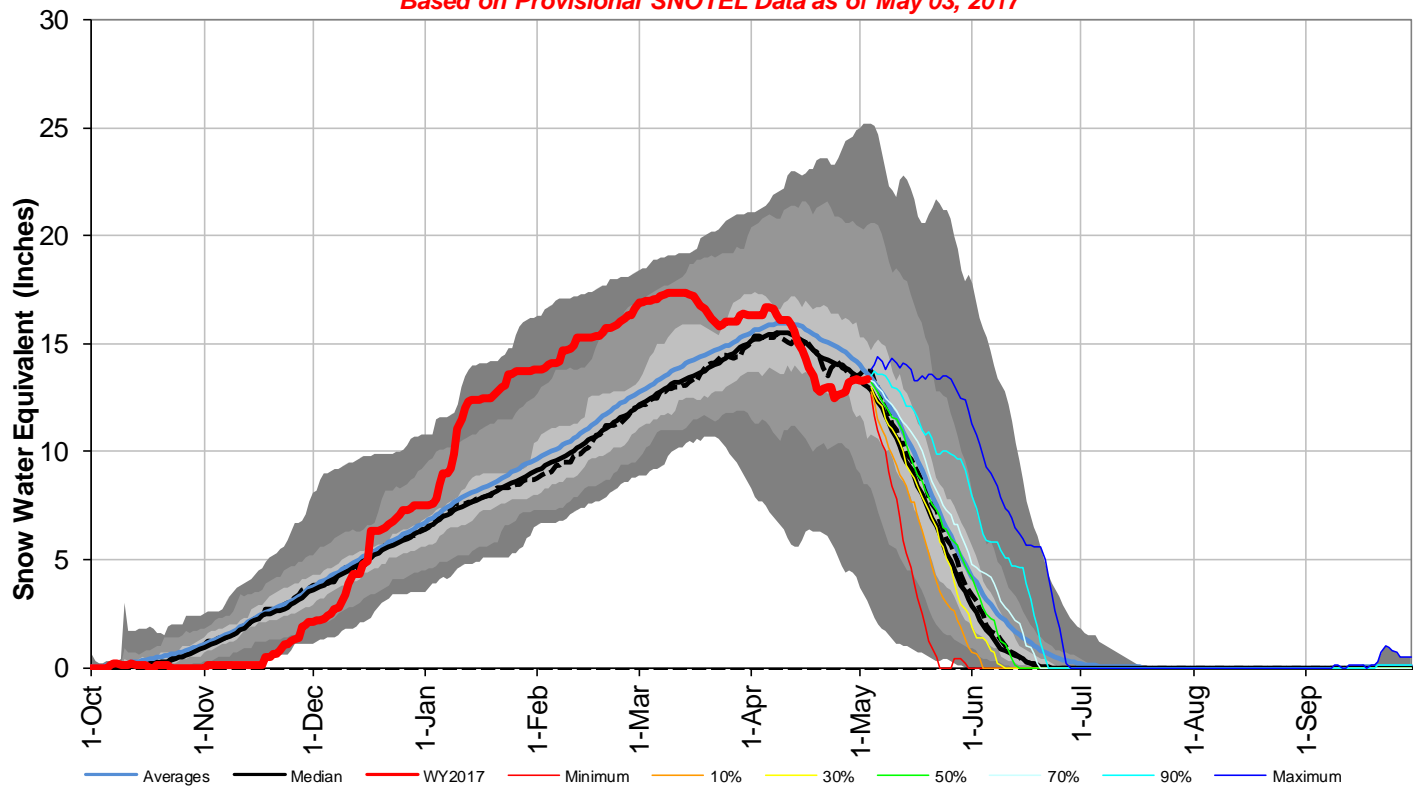
3) Median value used in place of average

Reservoir Storage End of April, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Dillon Reservoir	215.4	234.4	208.7	249.1
Green Mountain Reservoir	62.2	59.2	59.5	146.8
Homestake Reservoir	23.7	41.3	19.5	43.0
Lake Granby	318.1	305.9	262.4	465.6
Ruedi Reservoir	68.8	70.0	62.6	102.0
Shadow Mountain Reservoir	17.2	17.1	17.2	18.4
Vega Reservoir	19.1	17.1	18.3	32.9
Williams Fork Reservoir	74.7	76.7	60.8	97.0
Willow Creek Reservoir	6.6	6.1	6.6	9.1
Wolford Mountain Reservoir	60.5	47.1	47.7	65.9
Basin-wide Total	866.2	874.9	763.3	1229.8
# of reservoirs	10	10	10	10

Watershed Snowpack Analysis May 1, 2017	# of Sites	% Median	Last Year % Median
BLUE RIVER BASIN	8	104%	118%
HEADWATERS COLORADO RIVER	35	89%	117%
MUDDY CREEK BASIN	4	96%	131%
EAGLE RIVER BASIN	5	74%	115%
PLATEAU CREEK BASIN	3	96%	108%
ROARING FORK BASIN	10	107%	101%
WILLIAMS FORK BASIN	5	73%	114%
WILLOW CREEK BASIN	4	125%	136%
UPPER COLORADO RIVER BASIN	48	93%	112%

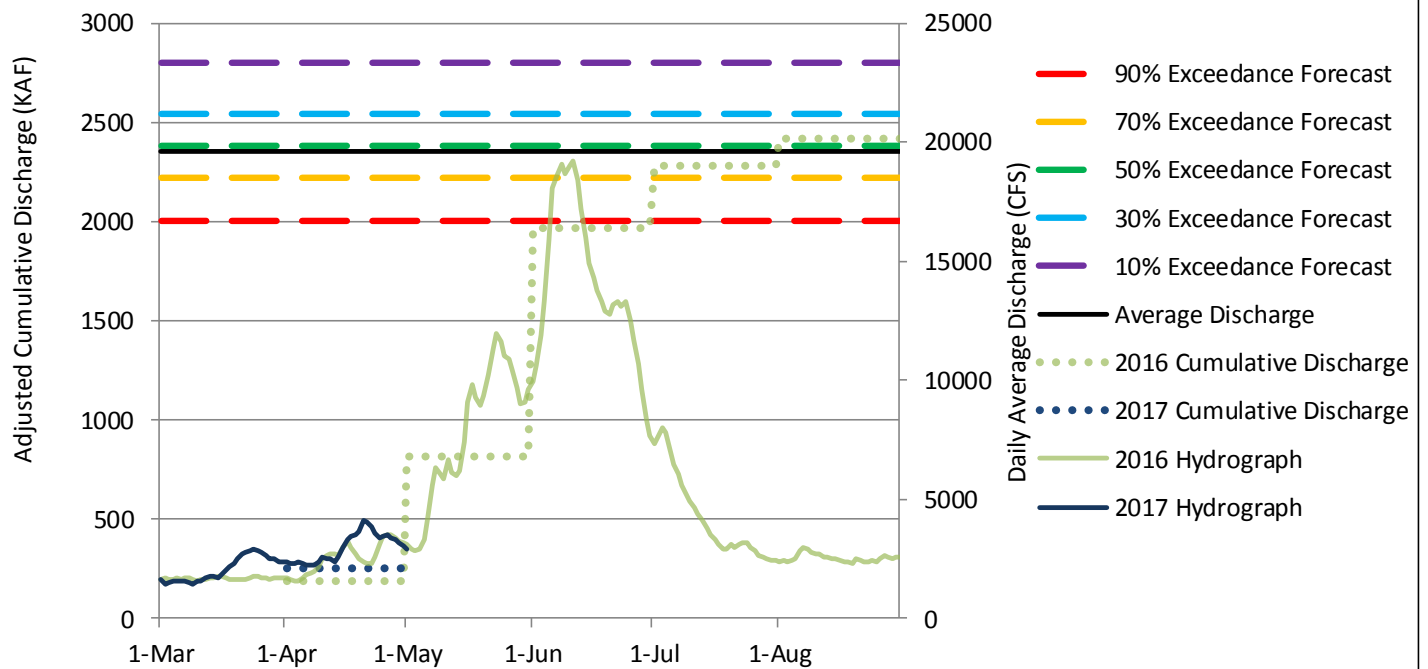
Upper Colorado River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of May 03, 2017



Colorado River near Cameo, CO

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

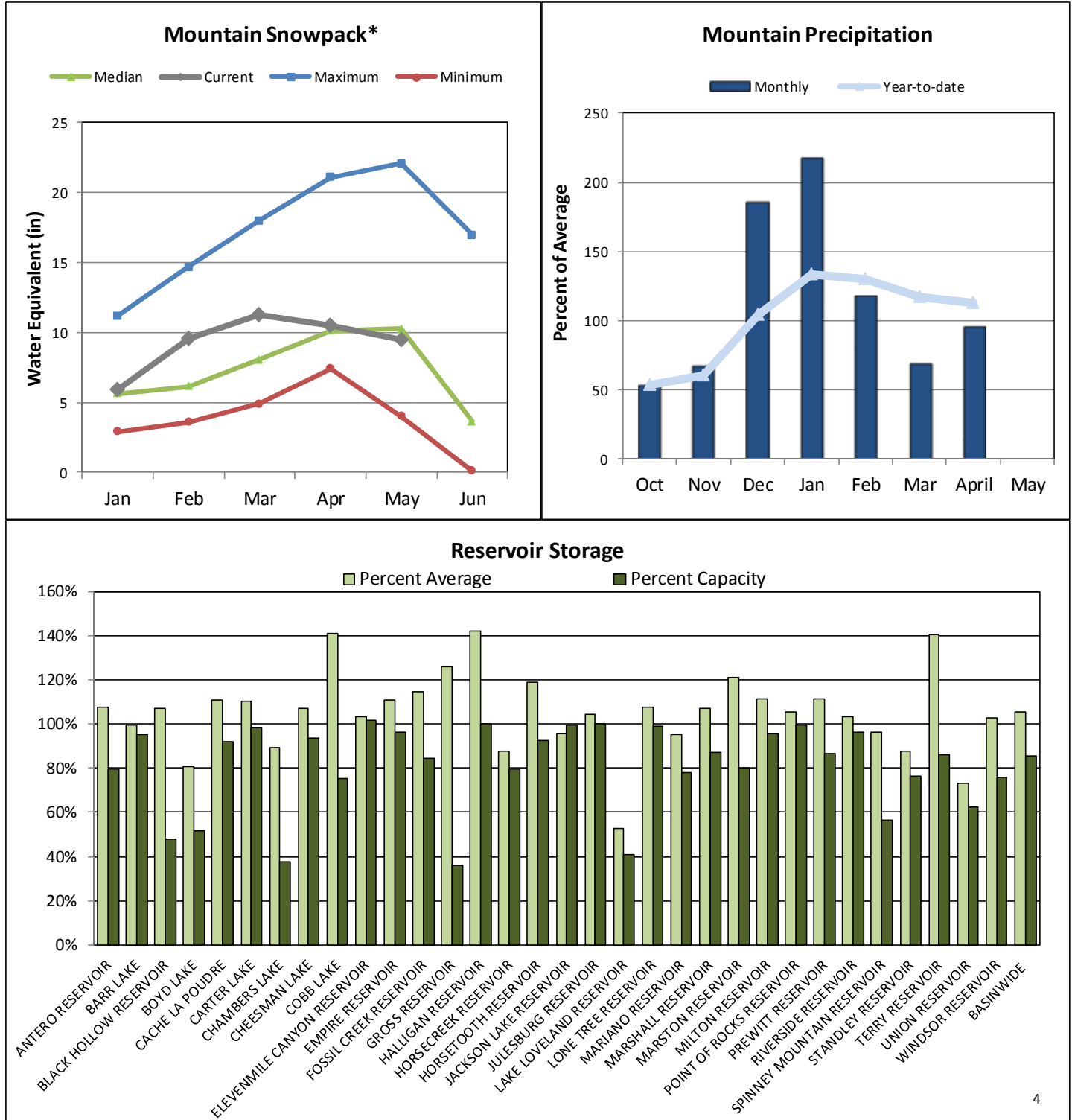


Please refer to the sections at the end of this report for further explanation concerning these graphs.

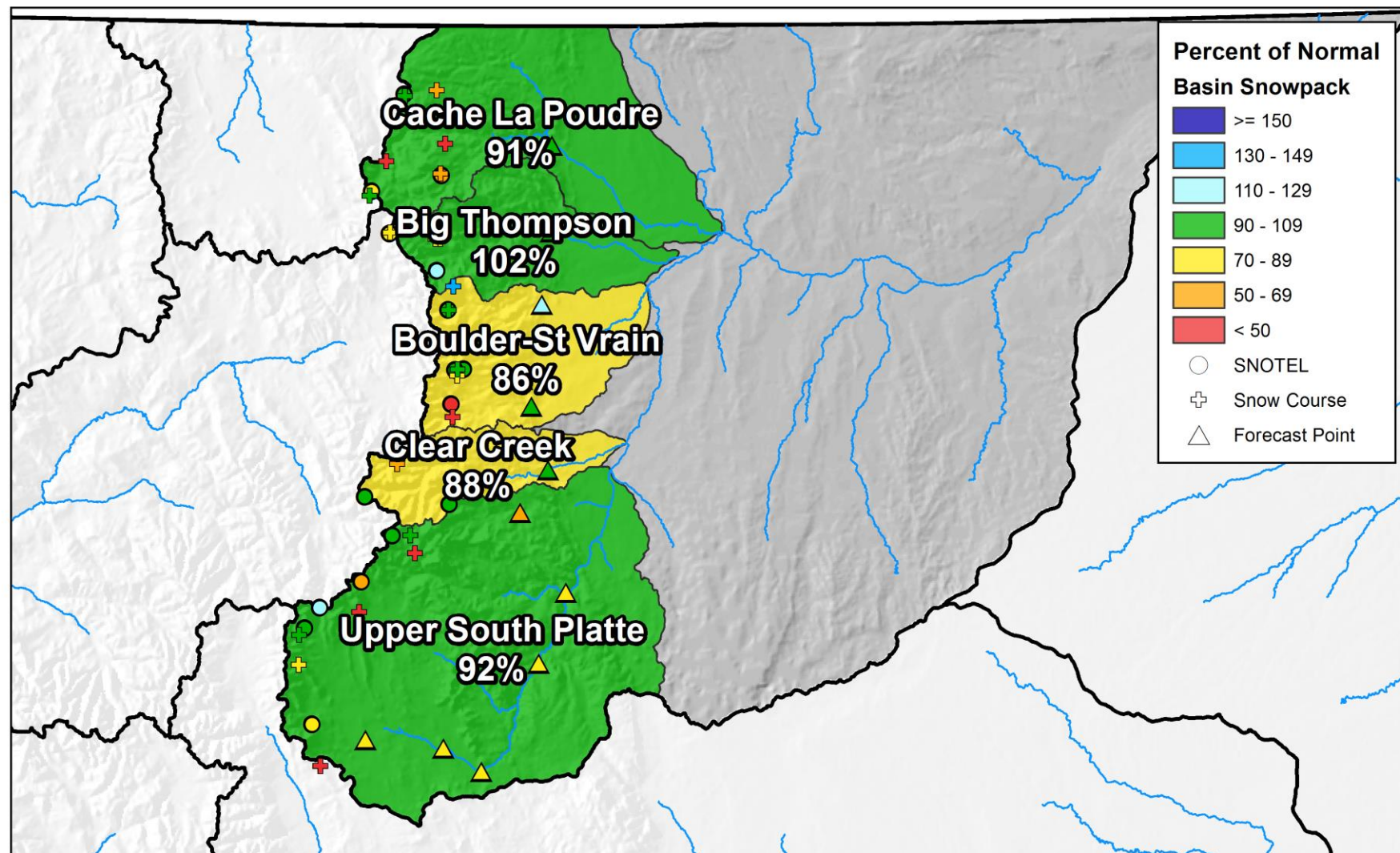
SOUTH PLATTE RIVER BASIN

May 1, 2017

Snowpack in the South Platte River basin is below normal at 93% of the median. Precipitation for April was 93% of average which brings water year-to-date precipitation to 111%. Reservoir storage at the end of April was 106% of average compared to 108% last year. Streamflow forecasts range from 111% of average for St. Vrain Creek at Lyons to 66% for Bear Creek at Evergreen.



South Platte River Basin Snowpack and Streamflow Forecasts May 1, 2017



0 10 20 40 60 80 Miles



United States Department of Agriculture

Natural Resources Conservation Service

South Platte River Basin Streamflow Forecasts - May 1, 2017

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

SOUTH PLATTE RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Antero Reservoir Inflow ²	APR-JUL	8.1	10.4	11.9	82%	13.4	15.7	14.5
	APR-SEP	9.7	12.5	14.4	81%	16.3	19.1	17.8
	MAY-JUL	7.5	9.8	11.3	86%	12.8	15.1	13.1
	MAY-SEP	9.1	11.9	13.8	84%	15.7	18.5	16.4
Spinney Mountain Reservoir Inflow ²	APR-JUL	33	39	42	88%	46	51	48
	APR-SEP	41	48	53	87%	57	65	61
	MAY-JUL	30	36	39	89%	43	48	44
	MAY-SEP	38	45	50	89%	54	62	56
Elevenmile Canyon Reservoir Inflow ²	APR-JUL	32	38	42	84%	47	52	50
	APR-SEP	40	48	54	84%	59	67	64
	MAY-JUL	30	36	40	89%	45	50	45
	MAY-SEP	38	46	52	90%	57	65	58
Cheesman Lake Inflow ²	APR-JUL	54	67	76	76%	85	98	100
	APR-SEP	69	85	96	76%	107	124	126
	MAY-JUL	48	61	70	81%	79	92	86
	MAY-SEP	63	79	90	80%	101	118	113
South Platte R at South Platte ²	APR-JUL	96	122	140	78%	157	184	180
	APR-SEP	123	155	176	78%	198	230	225
	MAY-JUL	84	110	128	82%	145	172	156
	MAY-SEP	111	143	164	80%	186	220	205
Bear Ck ab Evergreen	APR-JUL	6.8	9.2	10.8	66%	12.4	14.8	16.4
	APR-SEP	8.8	12	14.2	68%	16.4	19.6	21
	MAY-JUL	5.8	8.2	9.8	69%	11.4	13.8	14.2
	MAY-SEP	7.8	11	13.2	70%	15.4	18.6	18.9
Clear Ck at Golden	APR-JUL	83	94	102	97%	109	120	105
	APR-SEP	97	113	124	97%	135	151	128
	MAY-JUL	77	88	96	96%	103	114	100
	MAY-SEP	91	107	118	96%	129	145	123
St. Vrain Ck at Lyons ²	APR-JUL	83	92	98	111%	104	113	88
	APR-SEP	95	107	115	112%	123	135	103
	MAY-JUL	73	82	88	110%	94	103	80
	MAY-SEP	85	97	105	111%	113	125	95
Boulder Ck nr Orodell ²	APR-JUL	49	53	56	104%	59	64	54
	APR-SEP	55	61	65	103%	70	76	63
	MAY-JUL	44	48	51	100%	54	59	51
	MAY-SEP	50	56	60	102%	65	71	59
South Boulder Ck nr Eldorado Springs ²	APR-JUL	30	34	36	92%	39	43	39
	APR-SEP	32	37	40	93%	44	49	43
	MAY-JUL	28	32	34	97%	37	41	35
	MAY-SEP	30	35	38	97%	42	47	39
Big Thompson R at Canyon Mouth ²	APR-JUL	72	84	92	102%	100	112	90
	APR-SEP	84	100	110	103%	122	138	107
	MAY-JUL	65	77	85	100%	93	105	85
	MAY-SEP	77	93	104	102%	115	131	102
Cache La Poudre at Canyon Mouth ²	APR-JUL	163	197	220	98%	245	280	225
	APR-SEP	175	215	240	96%	265	305	250
	MAY-JUL	147	181	205	98%	230	265	210
	MAY-SEP	159	198	225	96%	250	290	235

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

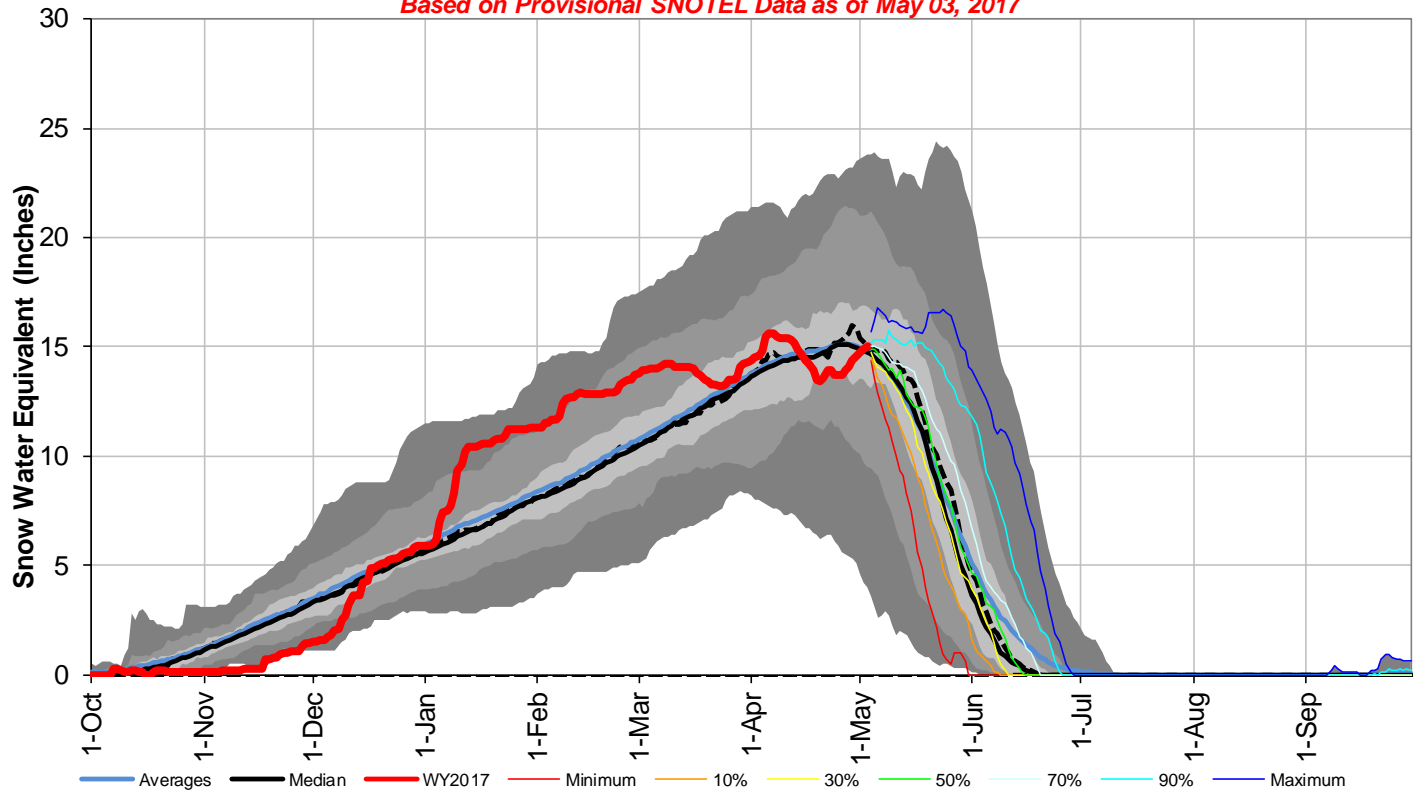
3) Median value used in place of average

Reservoir Storage End of April, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Antero Reservoir	15.8	2.1	14.7	19.9
Barr Lake	28.7	29.3	28.8	30.1
Black Hollow Reservoir	3.1	3.0	2.9	6.5
Boyd Lake	24.9	35.6	30.9	48.4
Cache La Poudre	9.3	10.0	8.4	10.1
Carter Lake	107.5	106.8	97.5	108.9
Chambers Lake	3.3	3.7	3.7	8.8
Cheesman Lake	74.1	78.4	69.0	79.0
Cobb Lake	16.8	18.6	11.9	22.3
Elevenmile Canyon Reservoir	99.7	99.4	96.6	98.0
Empire Reservoir	35.1	36.3	31.7	36.5
Fossil Creek Reservoir	9.4	9.7	8.2	11.1
Gross Reservoir	10.7	11.7	8.5	29.8
Halligan Reservoir	6.4	6.4	4.5	6.4
Horse Creek Reservoir	11.7	11.8	13.3	14.7
Horsetooth Reservoir	138.6	136.1	116.6	149.7
Jackson Lake Reservoir	26.0	26.1	27.1	26.1
Julesburg Reservoir	20.5	20.6	19.6	20.5
Lake Loveland Reservoir	4.2	8.4	8.0	10.3
Lone Tree Reservoir	8.6	8.5	8.0	8.7
Mariano Reservoir	4.2	4.8	4.4	5.4
Marshall Reservoir	8.7	9.6	8.1	10.0
Marston Reservoir	10.4	9.4	8.6	13.0
Milton Reservoir	22.5	22.7	20.2	23.5
Point Of Rocks Reservoir	70.3	69.0	66.5	70.6
Prewitt Reservoir	24.5	24.6	22.0	28.2
Ralph Price Reservoir	10.3	13.9	16.2	16.2
Riverside Reservoir	53.7	54.5	52.0	55.8
Spinney Mountain Reservoir	27.7	29.7	28.7	49.0
Standley Reservoir	32.1	41.2	36.6	42.0
Terry Reservoir	6.9	5.8	4.9	8.0
Union Reservoir	8.1	12.2	11.1	13.0
Windsor Reservoir	11.5	11.3	11.2	15.2
Basin-wide Total	935.0	957.2	884.2	1079.5
# of reservoirs	32	32	32	32

Watershed Snowpack Analysis May 1, 2017	# of Sites	% Median	Last Year % Median
BIG THOMPSON BASIN	7	102%	101%
BOULDER CREEK BASIN	6	86%	124%
CACHE LA POUDE BASIN	10	91%	116%
CLEAR CREEK BASIN	4	88%	115%
SAINT VRAIN BASIN	2	101%	93%
UPPER SOUTH PLATTE BASIN	16	92%	118%
SOUTH PLATTE RIVER BASIN	45	93%	114%

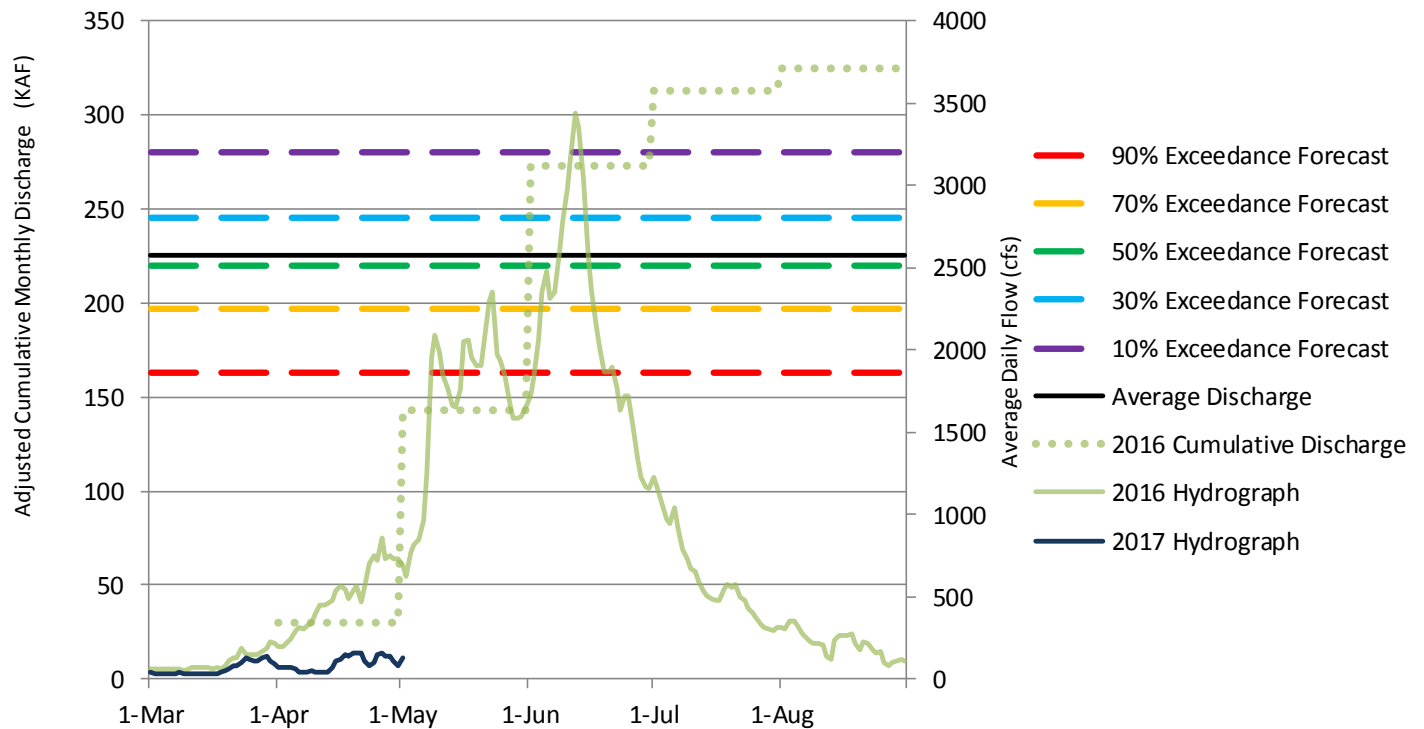
South Platte River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of May 03, 2017



Cache La Poudre River at Canyon Mouth

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

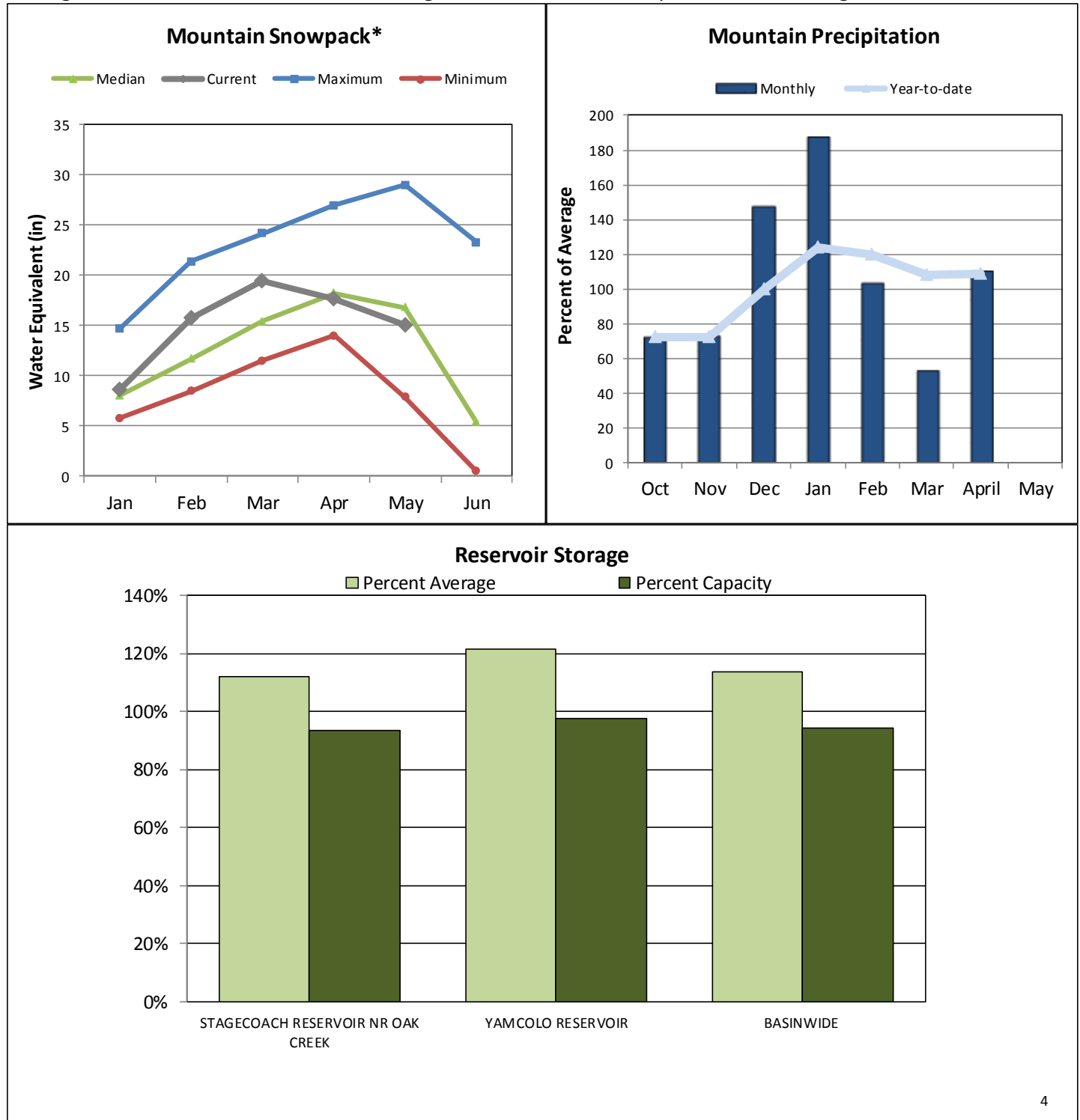


Please refer to the sections at the end of this report for further explanation concerning these graphs.

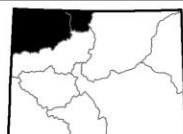
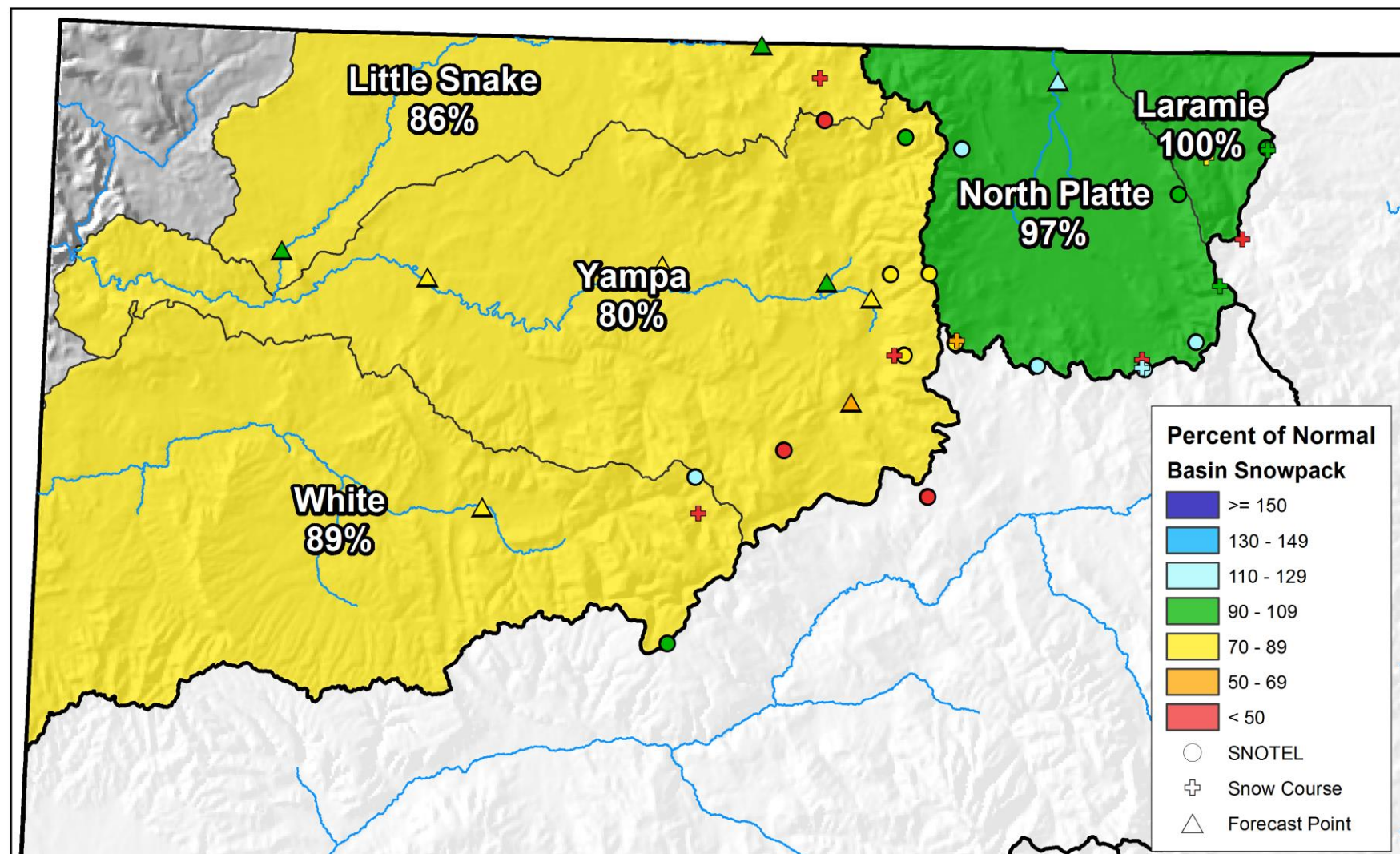
YAMPA, WHITE, NORTH PLATTE AND LARAMIE RIVER BASINS

May 1, 2017

Snowpack in the Yampa, White & North Platte basins is below normal at 91% of the median. Precipitation for April was 111% of average and water year-to-date precipitation is 110% of average. Reservoir storage at the end of April was 114% of average compared to 115% last year. Streamflow forecasts range from 112% of average for the North Platte River at Northgate to 67% for the Yampa River above Stagecoach Reservoir.



Yampa, White, and North Platte River Basins Snowpack and Streamflow Forecasts May 1, 2017



0 10 20 40 60 80 Miles



United States Department of Agriculture

Natural Resources Conservation Service

Yampa-White-North Platte River Basins

Streamflow Forecasts - May 1, 2017

 Forecast Exceedance Probabilities for Risk Assessment
 Chance that actual volume will exceed forecast

YAMPA-WHITE-NORTH PLATTE RIVER BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
North Platte R nr Northgate	MAY-JUL	117	172	210	112%	250	305	187
	MAY-SEP	132	194	235	112%	280	340	210
Laramie R nr Woods ²	MAY-JUL	81	103	119	110%	135	157	108
	MAY-SEP	88	113	130	109%	147	172	119
Yampa R ab Stagecoach Reservoir ²	APR-JUL	4.5	11.1	15.5	67%	19.9	26	23
	MAY-JUL	1.04	7.6	12	75%	16.4	23	16
Yampa R at Steamboat Springs ²	APR-JUL	157	190	215	83%	240	270	260
	MAY-JUL	129	162	185	84%	210	240	220
Elk R nr Milner	APR-JUL	245	285	320	100%	355	410	320
	MAY-JUL	169	210	245	84%	280	335	290
Elkhead Ck ab Long Gulch	APR-JUL	47	57	65	89%	74	88	73
	MAY-JUL	20	30	38	76%	47	61	50
Yampa R nr Maybell ²	APR-JUL	595	710	790	84%	880	1020	935
	MAY-JUL	425	540	620	80%	710	850	775
Little Snake R nr Slater ²	APR-JUL	123	140	152	97%	165	185	156
	MAY-JUL	94	111	123	89%	136	156	138
Little Snake R nr Dixon ²	APR-JUL	215	265	305	88%	350	420	345
	MAY-JUL	153	205	245	83%	290	360	295
Little Snake R nr Lily ²	APR-JUL	220	275	320	93%	370	450	345
	MAY-JUL	152	210	255	88%	305	385	290
White R nr Meeker	APR-JUL	172	205	230	82%	255	300	280
	MAY-JUL	134	167	191	78%	215	260	245

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

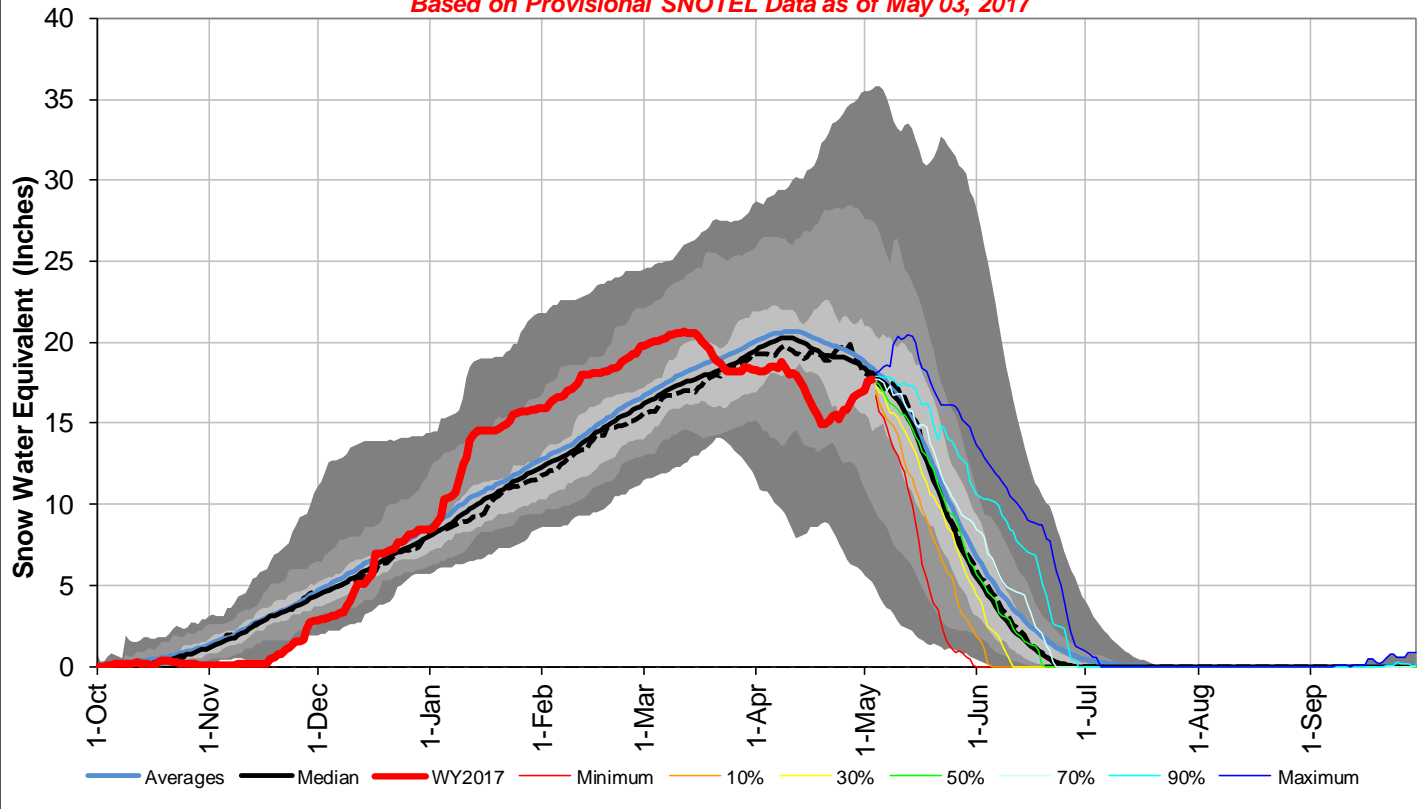
3) Median value used in place of average

Reservoir Storage End of April, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Stagecoach Reservoir nr Oak Creek	34.1	35.5	30.4	36.5
Yamcolo Reservoir	8.5	7.6	7.0	8.7
Basin-wide Total	42.6	43.1	37.4	45.2
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis May 1, 2017	# of Sites	% Median	Last Year % Median
LARAMIE RIVER BASIN	5	100%	134%
NORTH PLATTE RIVER BASIN	12	97%	111%
LARAMIE & NORTH PLATTE RIVER BASINS	17	97%	115%
ELK RIVER BASIN	2	83%	97%
YAMPA RIVER BASIN	11	80%	113%
WHITE RIVER BASIN	3	98%	105%
YAMPA & WHITE RIVER BASINS	13	81%	109%
LITTLE SNAKE RIVER BASIN	9	86%	111%
YAMPA-WHITE-NORTH PLATTE RIVER BASINS	35	91%	114%

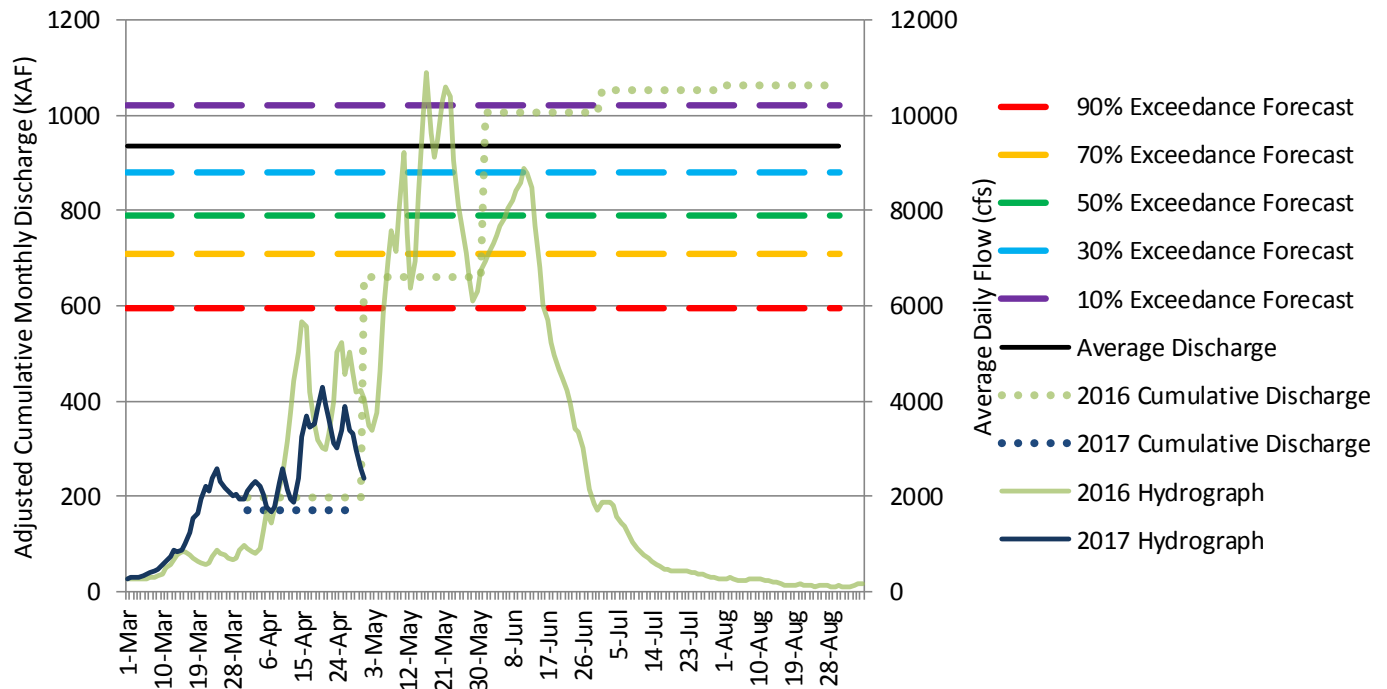
Yampa, White & North Platte River Basins with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of May 03, 2017



Yampa River near Maybell

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

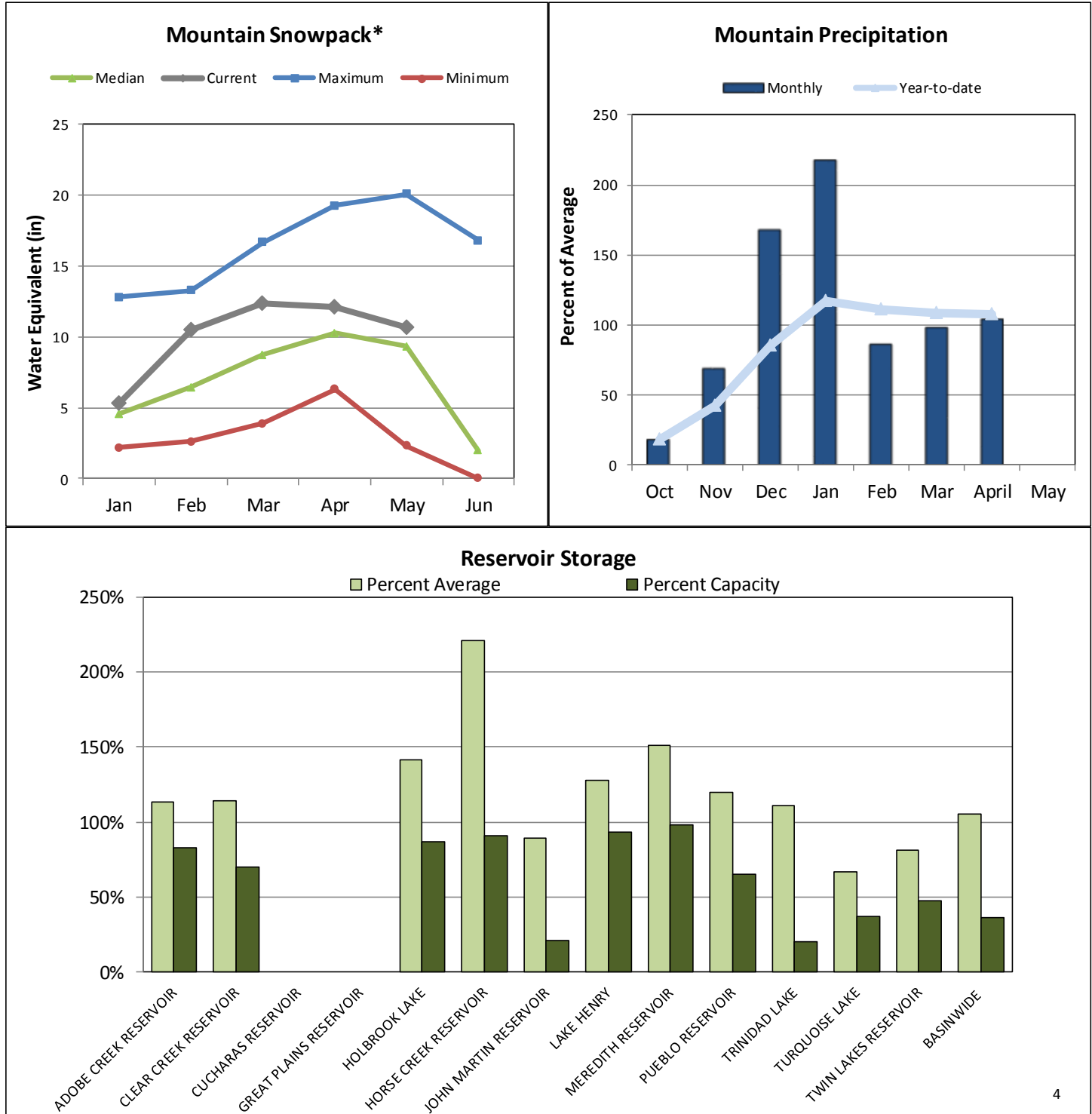


Please refer to the sections at the end of this report for further explanation concerning these graphs.

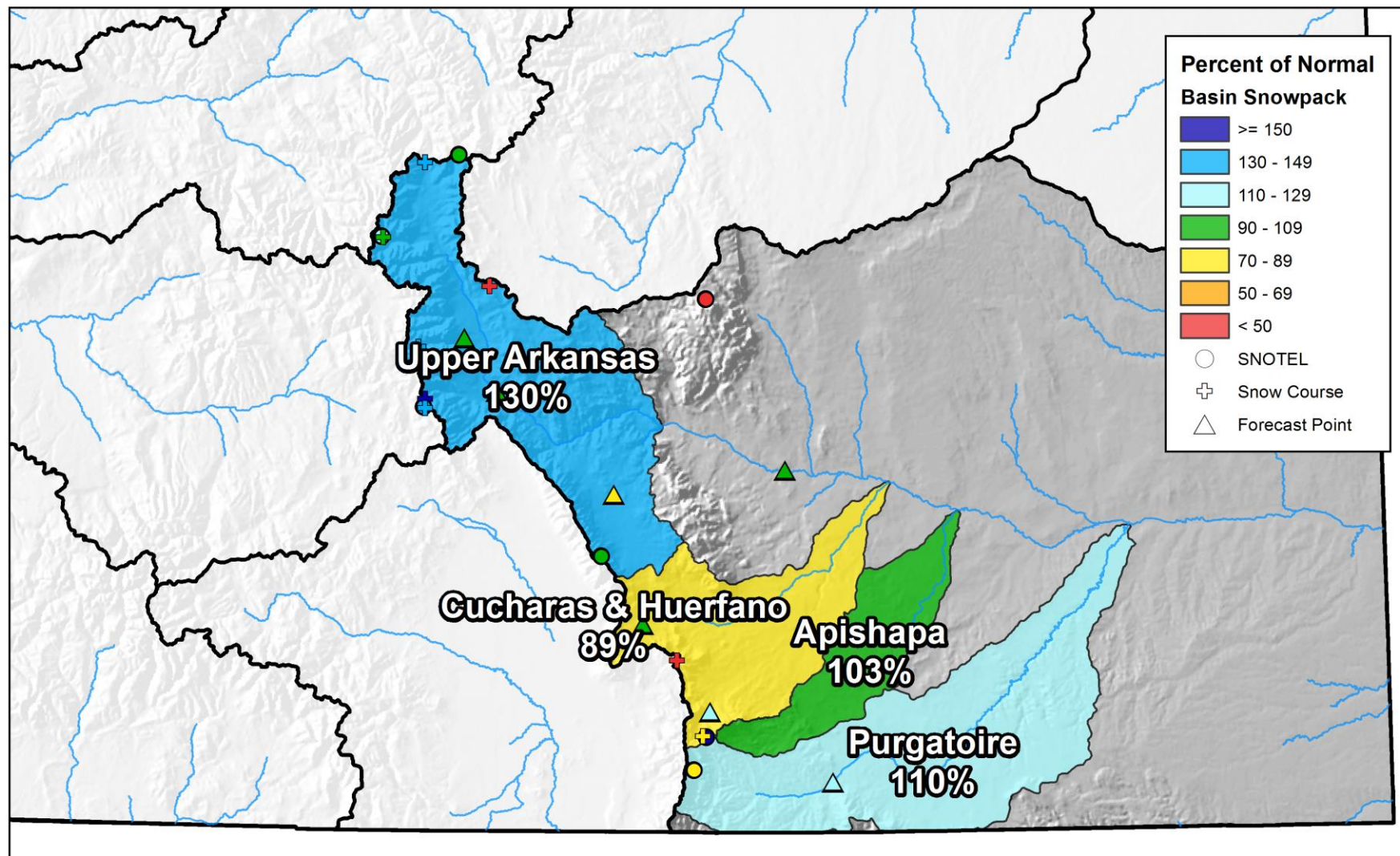
ARKANSAS RIVER BASIN

May 1, 2017

Snowpack in the Arkansas River basin is above normal at 115% of the median. Precipitation for April was 104% of average which brings water year-to-date precipitation to 107% of average. Reservoir storage at the end of April was 106% of average compared to 125% last year. Current streamflow forecasts range from 114% of average for inflow to Trinidad Lake to 83% of average for Grape Creek near Westcliffe.



Arkansas River Basin Snowpack and Streamflow Forecasts May 1, 2017



0 10 20 40 60 80 Miles



United States Department of Agriculture

Natural Resources Conservation Service

Arkansas River Basin

Streamflow Forecasts - May 1, 2017

 Forecast Exceedance Probabilities for Risk Assessment
 Chance that actual volume will exceed forecast

ARKANSAS RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Chalk Ck nr Nathrop	APR-JUL	13	17.9	22	105%	26	33	21
	APR-SEP	15.3	22	27	104%	33	42	26
	MAY-JUL	12.2	17.1	21	100%	25	32	21
	MAY-SEP	14.5	21	26	100%	32	41	26
Arkansas R at Salida ²	APR-JUL	210	240	265	110%	290	330	240
	APR-SEP	240	285	320	108%	355	410	295
	MAY-JUL	189	220	245	107%	270	310	230
	MAY-SEP	220	265	300	107%	335	390	280
Grape Ck nr Westcliffe	APR-JUL	8.1	11	13.2	83%	15.7	19.8	15.9
	APR-SEP	10.6	14.2	17	87%	20	25	19.6
	MAY-JUL	6.4	9.3	11.5	91%	14	18.1	12.7
	MAY-SEP	8.9	12.5	15.3	93%	18.3	23	16.4
Pueblo Reservoir Inflow ²	APR-JUL	270	340	395	110%	455	550	360
	APR-SEP	315	410	485	107%	565	695	455
	MAY-JUL	230	300	355	108%	415	510	330
	MAY-SEP	275	370	445	105%	525	655	425
Huerfano R nr Redwing	APR-JUL	7.6	9.5	11	92%	12.6	15.1	11.9
	APR-SEP	10.4	12.7	14.5	95%	16.4	19.4	15.2
	MAY-JUL	6.4	8.3	9.8	92%	11.4	13.9	10.7
	MAY-SEP	9.2	11.5	13.3	95%	15.2	18.2	14
Cucharas R nr La Veta	APR-JUL	10.9	12.5	13.6	111%	14.8	16.6	12.2
	APR-SEP	12	14	15.5	110%	17.1	19.5	14.1
	MAY-JUL	8.8	10.4	11.5	106%	12.7	14.5	10.8
	MAY-SEP	9.9	11.9	13.4	106%	15	17.4	12.7
Trinidad Lake Inflow ²	MAR-JUL	31	37	42	114%	47	55	37
	APR-SEP	36	45	52	111%	60	73	47
	MAY-JUL	21	27	32	107%	37	45	30
	MAY-SEP	28	37	44	105%	52	65	42

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

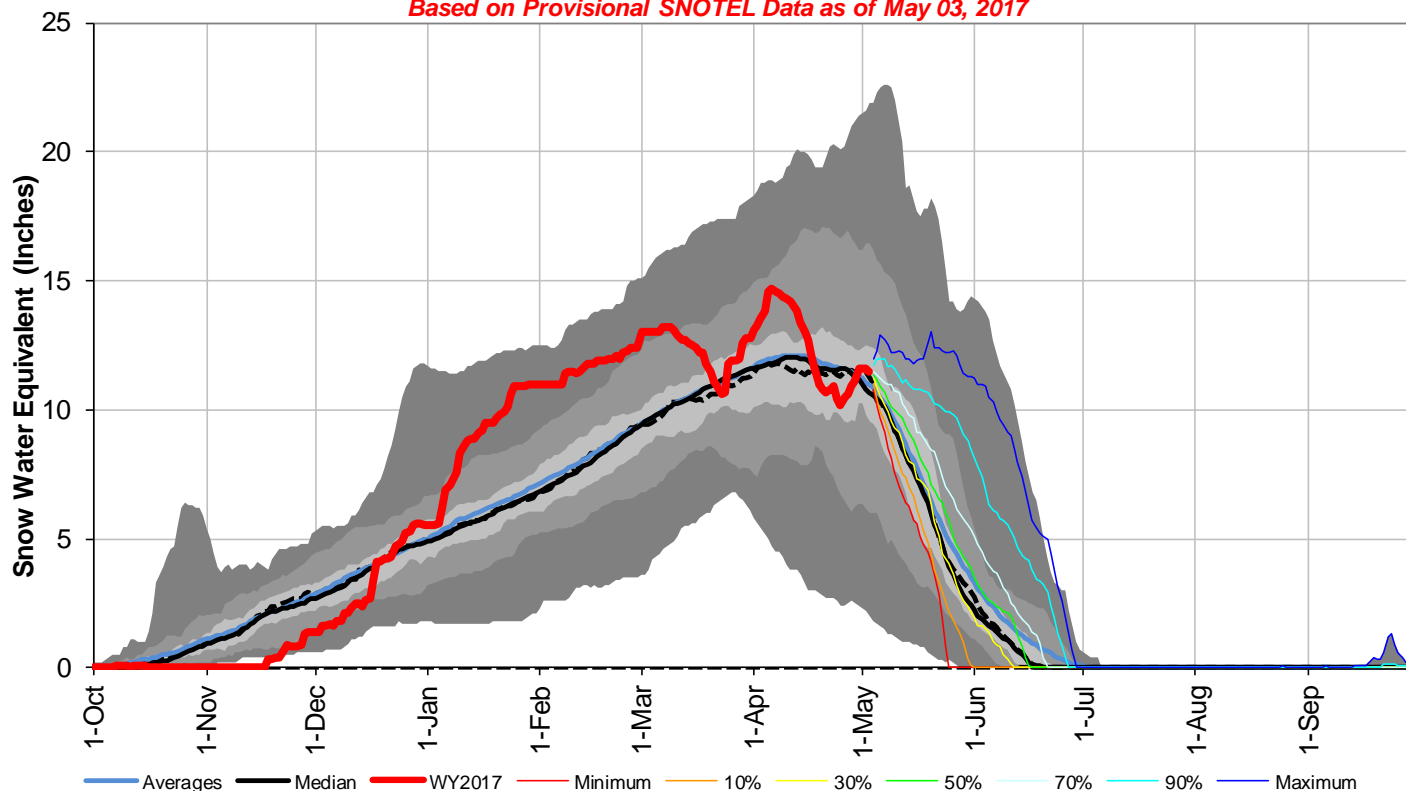
3) Median value used in place of average

Reservoir Storage End of April, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Adobe Creek Reservoir	51.4	66.5	45.2	62.0
Clear Creek Reservoir	8.0	8.3	7.0	11.4
Cucharas Reservoir			6.5	40.0
Great Plains Reservoir		0.0	36.3	150.0
Holbrook Lake	6.1	2.2	4.3	7.0
Horse Creek Reservoir	24.5	24.6	11.1	27.0
John Martin Reservoir	129.0	224.5	143.9	616.0
Lake Henry	8.7	8.5	6.8	9.4
Meredith Reservoir	41.2	37.8	27.3	42.0
Pueblo Reservoir	231.1	235.2	192.4	354.0
Trinidad Lake	33.7	30.1	30.4	167.0
Turquoise Lake	47.3	60.3	70.4	127.0
Twin Lakes Reservoir	40.8	39.2	50.1	86.0
Basin-wide Total	621.8	737.2	588.9	1508.8
# of reservoirs	11	11	11	11

Watershed Snowpack Analysis May 1, 2017	# of Sites	% Median	Last Year % Median
UPPER ARKANSAS BASIN	9	130%	116%
CUCHARAS & HUERFANO BASINS	5	89%	98%
PURGATOIRE RIVER BASIN	2	110%	85%
ARKANSAS RIVER BASIN	16	115%	110%

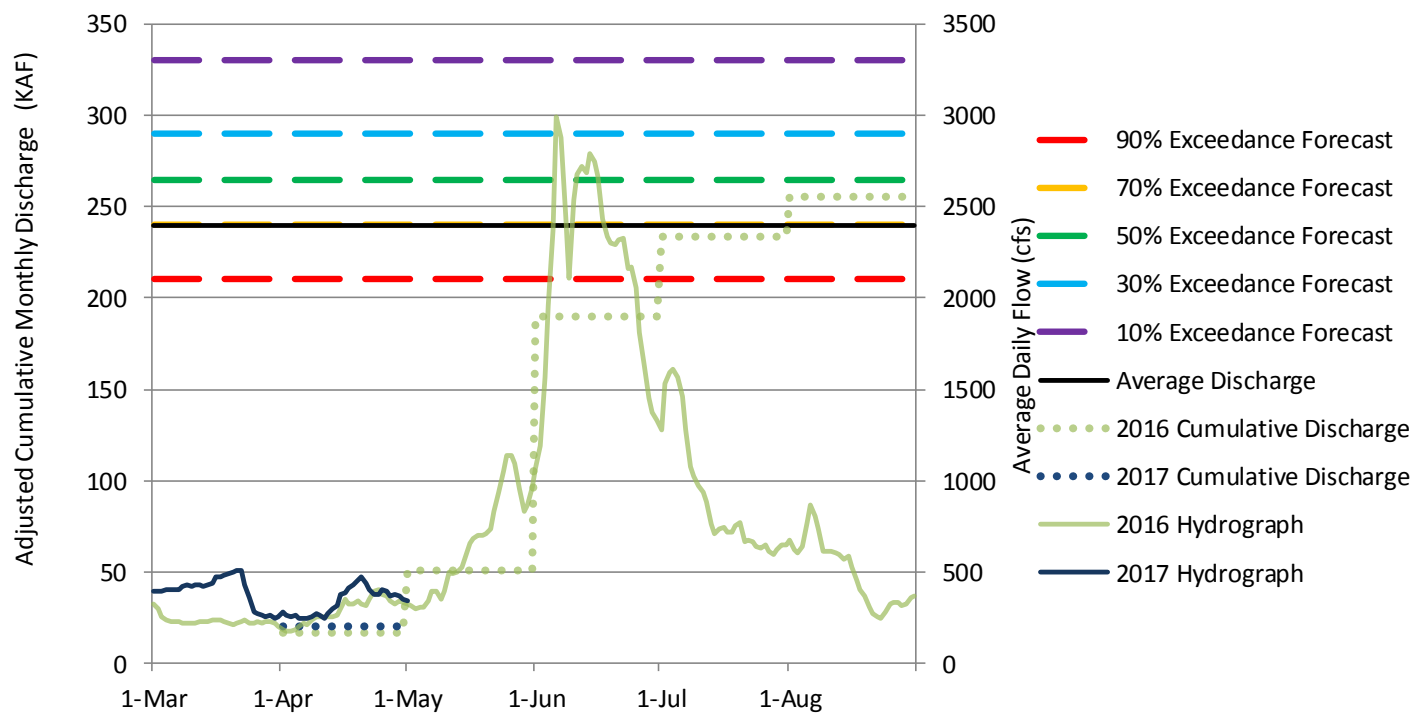
Arkansas River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of May 03, 2017



Arkansas River at Salida, CO

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)

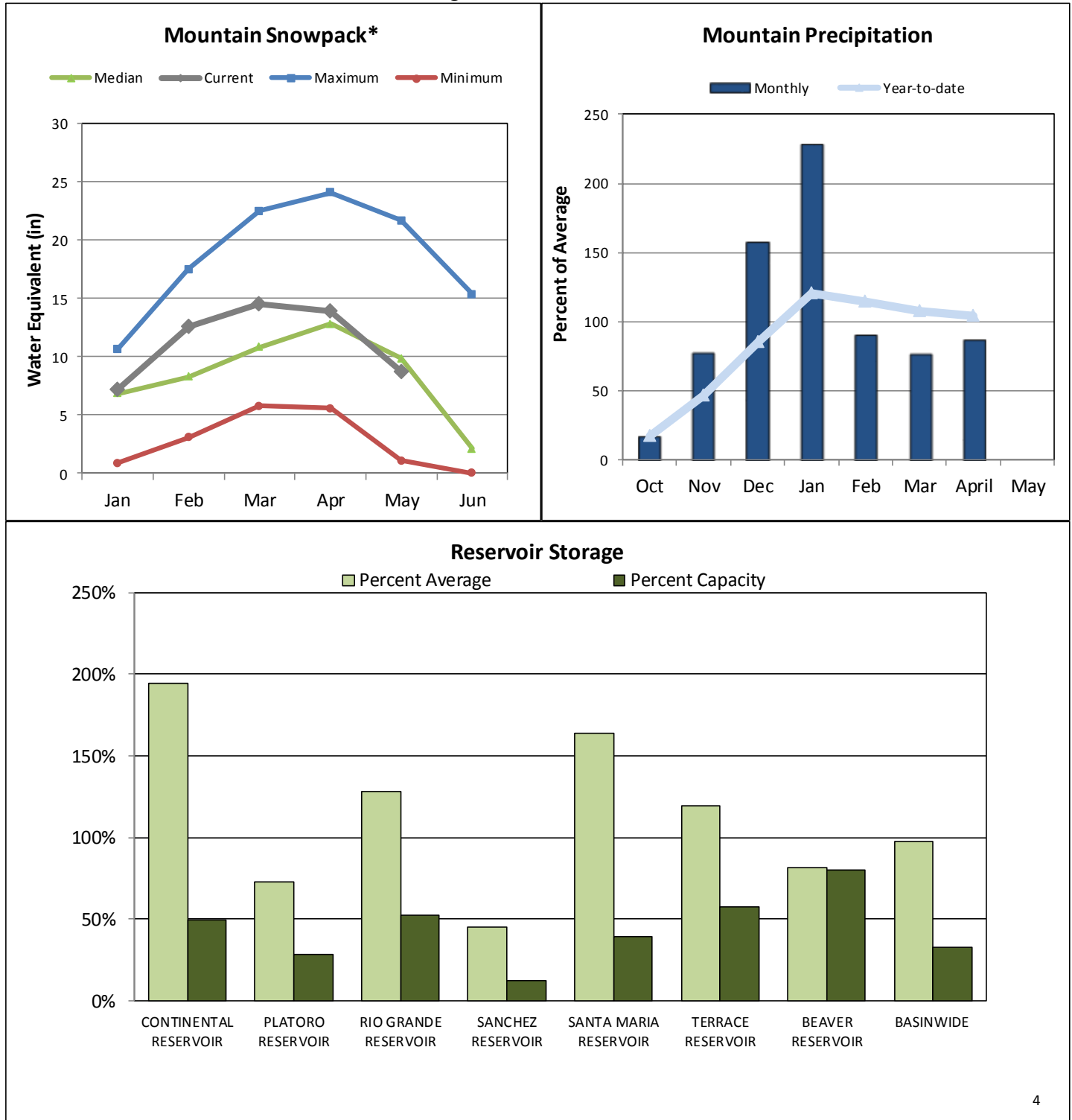


Please refer to the sections at the end of this report for further explanation concerning these graphs.

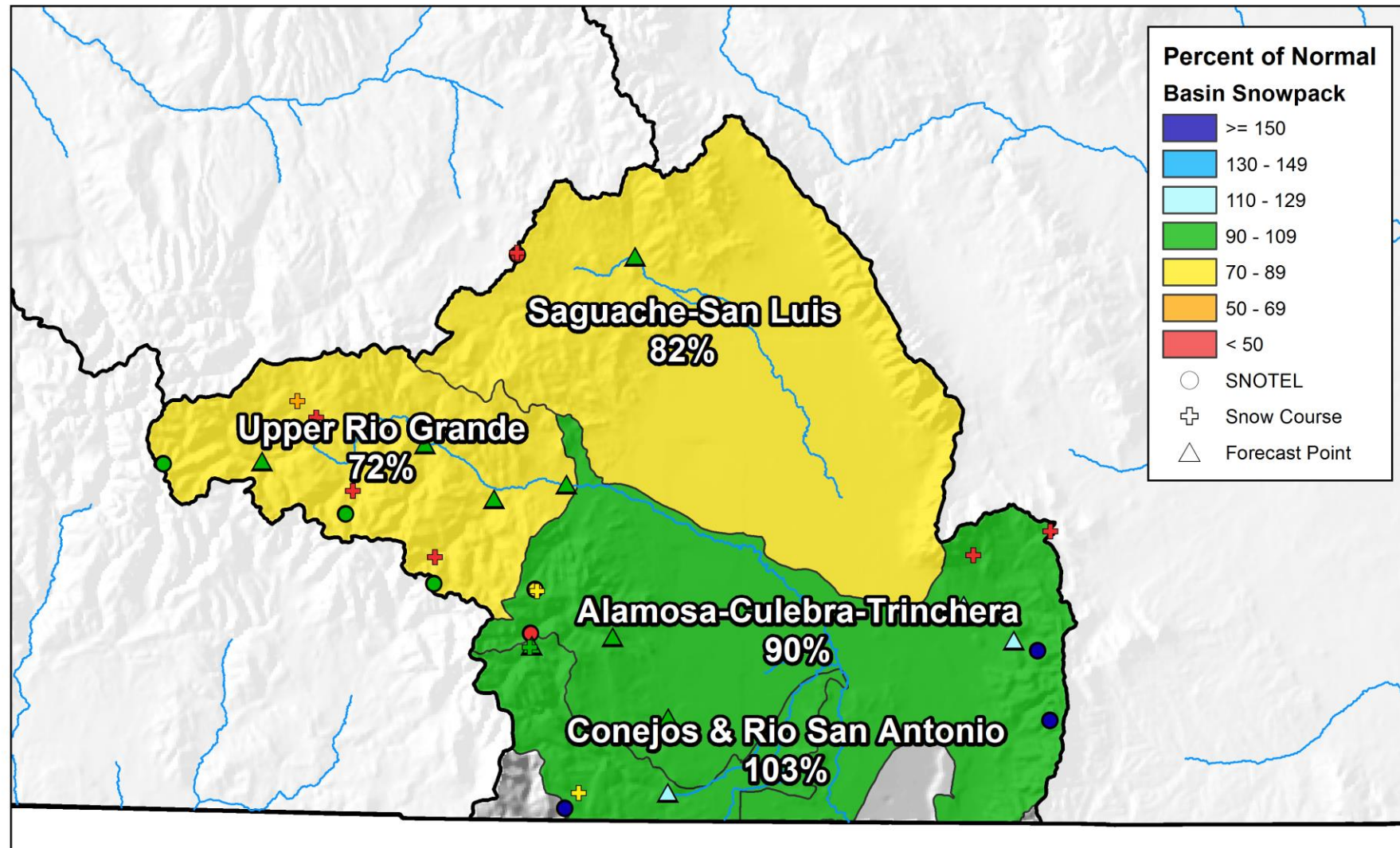
UPPER RIO GRANDE RIVER BASIN

May 1, 2017

Snowpack in the Upper Rio Grande River basin is below normal at 88% of median. Precipitation for April was 86% of average which brings water year-to-date precipitation to 104% of average. Reservoir storage at the end of April was 98% of average compared to 91% last year. Streamflow forecasts range from 154% of average for the San Antonio River at Ortiz to 96% of average for Alamosa Creek above Terrace Reservoir.



Upper Rio Grande River Basin Snowpack and Streamflow Forecasts May 1, 2017



0 10 20 40 60 80 Miles



United States Department of Agriculture

Natural Resources Conservation Service

Upper Rio Grande Basin Streamflow Forecasts - May 1, 2017

 Forecast Exceedance Probabilities for Risk Assessment
 Chance that actual volume will exceed forecast

UPPER RIO GRANDE BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Rio Grande at Thirty Mile Bridge ²	APR-JUL	89	101	109	96%	118	131	113
	APR-SEP	96	111	122	95%	133	151	129
	MAY-JUL	73	85	93	88%	102	115	106
	MAY-SEP	80	95	106	87%	117	135	122
Rio Grande at Wagon Wheel Gap ²	APR-SEP	275	305	330	97%	360	400	340
	MAY-SEP	220	250	275	87%	305	345	315
SF Rio Grande at South Fork ²	APR-SEP	110	120	127	100%	134	145	127
	MAY-SEP	83	93	100	88%	107	118	113
Rio Grande nr Del Norte ²	APR-SEP	425	470	505	98%	540	595	515
	MAY-SEP	330	375	410	87%	445	500	470
Saguache Ck nr Saguache	APR-SEP	25	31	35	109%	40	49	32
	MAY-SEP	21	27	31	107%	36	45	29
Alamosa Ck ab Terrace Reservoir	APR-SEP	52	59	65	96%	70	78	68
	MAY-SEP	41	48	54	87%	59	67	62
La Jara Ck nr Capulin	MAR-JUL	6.9	8.2	9.1	102%	10.2	12	8.9
	MAY-JUL	3.4	4.7	5.6	100%	6.7	8.5	5.6
Trinchera Ck ab Turners Ranch	APR-SEP	12.9	14.7	16	127%	17.4	19.5	12.6
	MAY-SEP	11.3	13.1	14.4	124%	15.8	17.9	11.6
Sangre de Cristo Ck ²	APR-SEP	13.3	17.4	21	129%	24	31	16.3
	MAY-SEP	8.6	12.7	16	126%	19.6	26	12.7
Ute Ck nr Fort Garland	APR-SEP	10.8	13.7	16	125%	18.4	23	12.8
	MAY-SEP	9.3	12.2	14.5	125%	16.9	21	11.6
Platoro Reservoir Inflow	APR-JUL	49	54	58	104%	62	68	56
	APR-SEP	52	59	63	102%	68	75	62
	MAY-JUL	42	47	51	96%	55	61	53
	MAY-SEP	45	52	56	95%	61	68	59
Conejos R nr Mogote ²	APR-SEP	183	205	215	111%	230	255	194
	MAY-SEP	150	170	184	104%	199	220	177
San Antonio R at Ortiz	APR-SEP	21	23	24	154%	25	28	15.6
	MAY-SEP	9.3	11.1	12.5	133%	13.9	16.2	9.4
Los Pinos R nr Ortiz	APR-SEP	88	95	100	137%	106	114	73
	MAY-SEP	64	71	76	125%	82	90	61
Culebra Ck at San Luis	APR-SEP	20	26	30	130%	34	41	23
	MAY-SEP	16.6	22	26	124%	30	37	21
Costilla Reservoir Inflow	MAY-JUL	6.6	8.4	9.7	109%	11.1	13.4	8.9
	MAY-JUL	13.4	17.9	21	107%	25	31	19.6

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

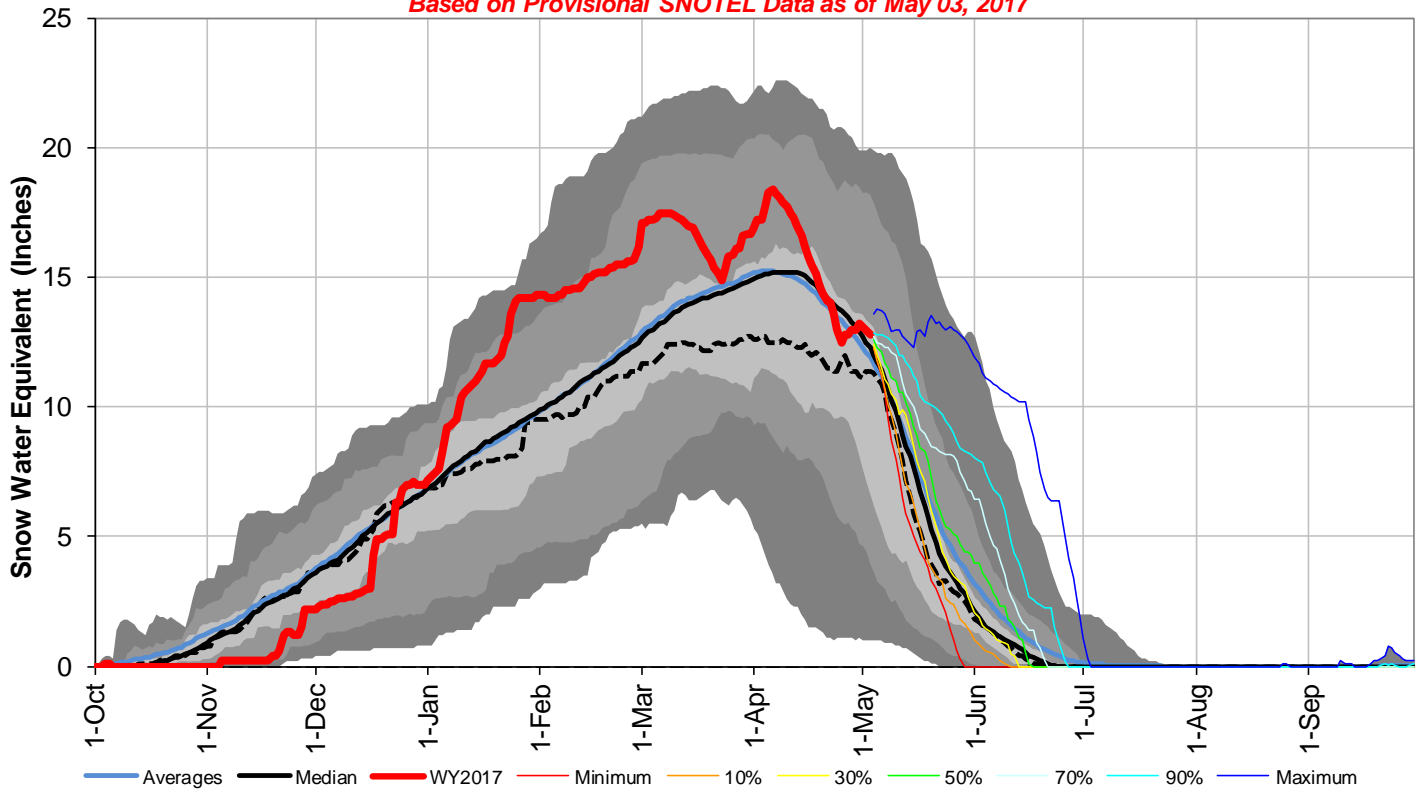
3) Median value used in place of average

Reservoir Storage End of April, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Beaver Reservoir	3.6	1.3	4.4	4.5
Continental Reservoir	13.4	7.2	6.9	27.0
Platoro Reservoir	17.1	14.1	23.5	60.0
Rio Grande Reservoir	26.7	34.7	20.8	51.0
Sanchez Reservoir	13.0	11.4	29.0	103.0
Santa Maria Reservoir	17.5	18.7	10.7	45.0
Terrace Reservoir	10.4	7.6	8.7	18.0
Basin-wide Total	101.7	94.9	104.0	308.5
# of reservoirs	7	7	7	7

Watershed Snowpack Analysis May 1, 2017	# of Sites	% Median	Last Year % Median
ALAMOSA CREEK BASIN	3	59%	74%
CONEJOS & RIO SAN ANTONIO BASINS	4	103%	65%
CULEBRA & TRINCHERA BASINS	5	118%	97%
HEADWATERS RIO GRANDE RIVER BASIN	13	72%	78%
UPPER RIO GRANDE BASIN	24	88%	77%

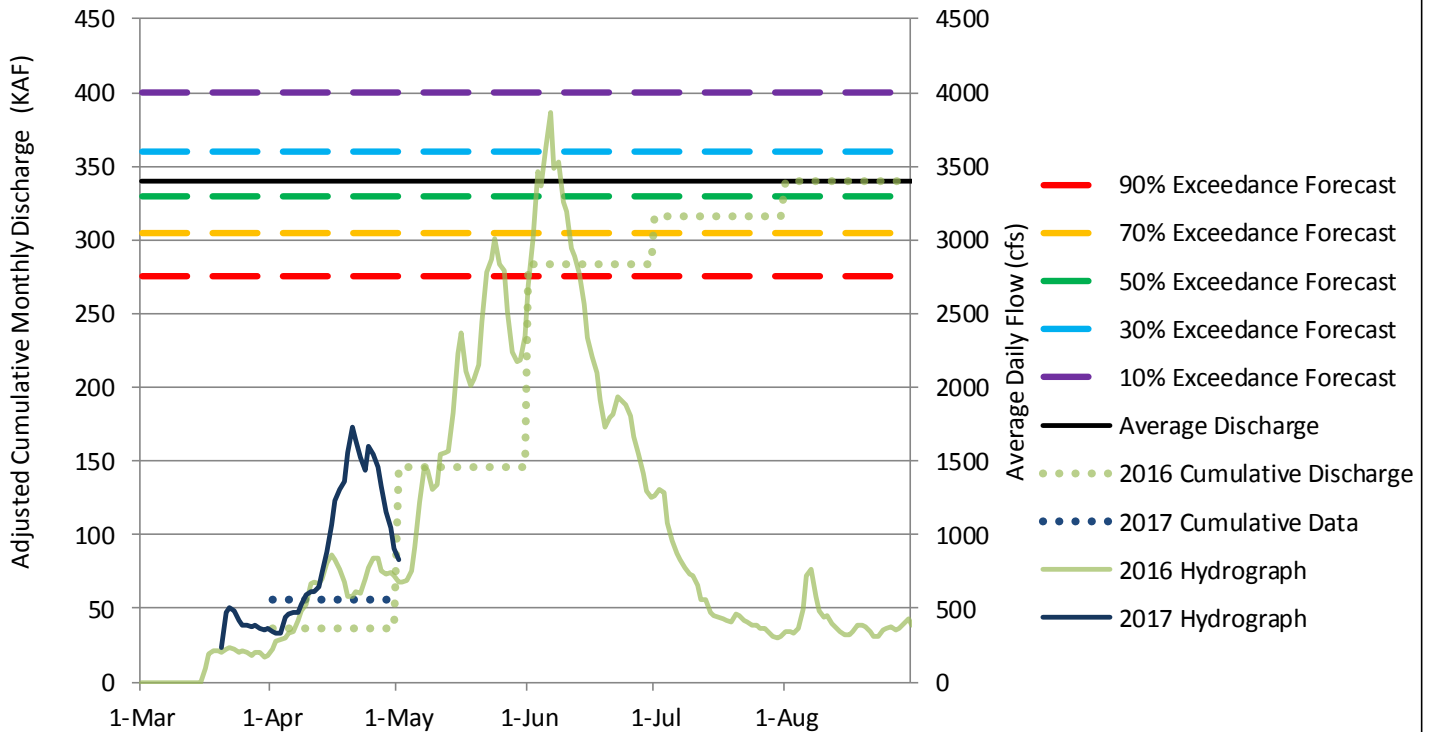
Upper Rio Grande River Basin with Non-Exceedance Projections

Based on Provisional SNOTEL Data as of May 03, 2017



Rio Grande at Wagon Wheel Gap

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr-Sep)

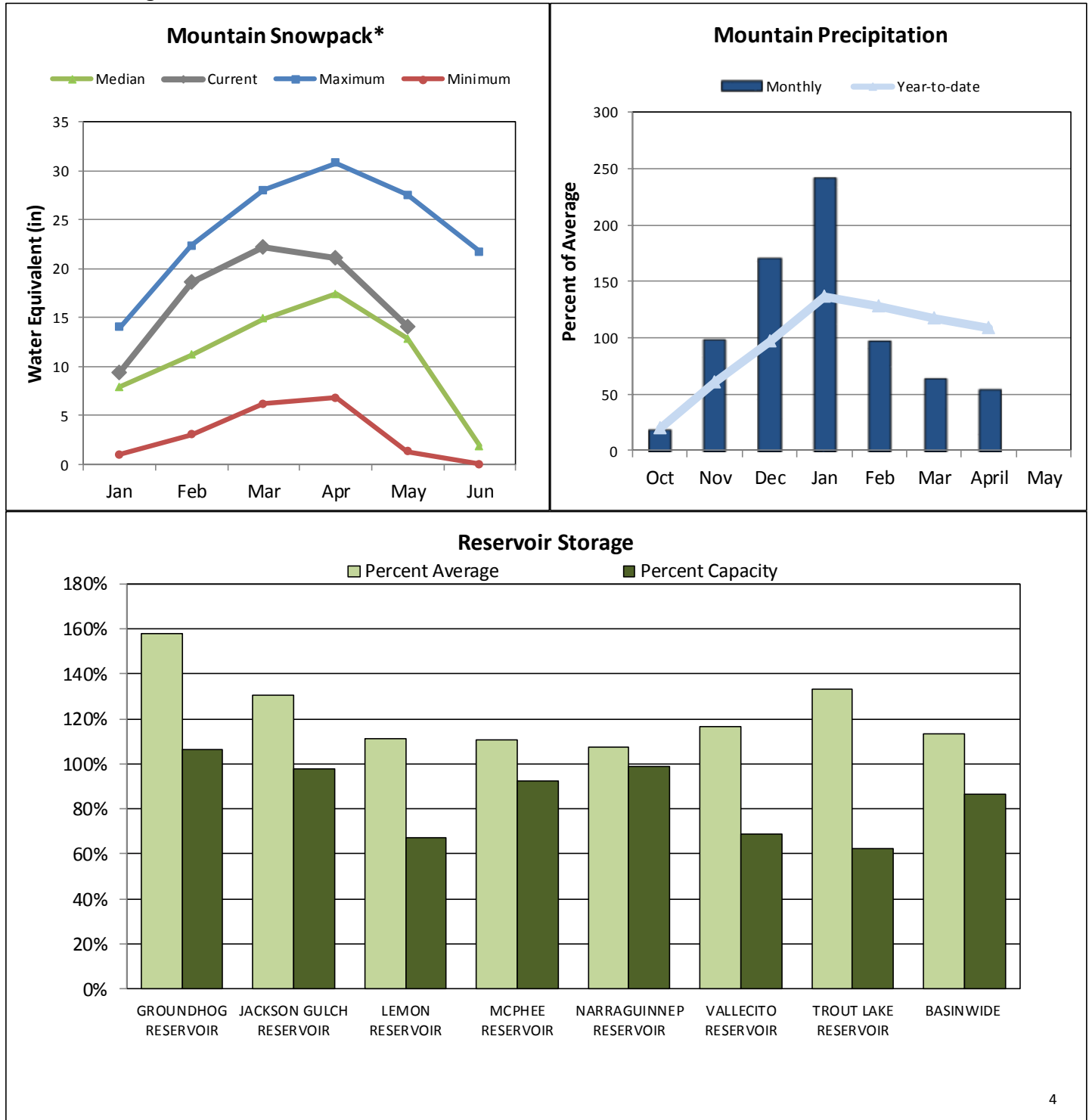


Please refer to the sections at the end of this report for further explanation concerning these graphs.

SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN RIVER BASINS

May 1, 2017

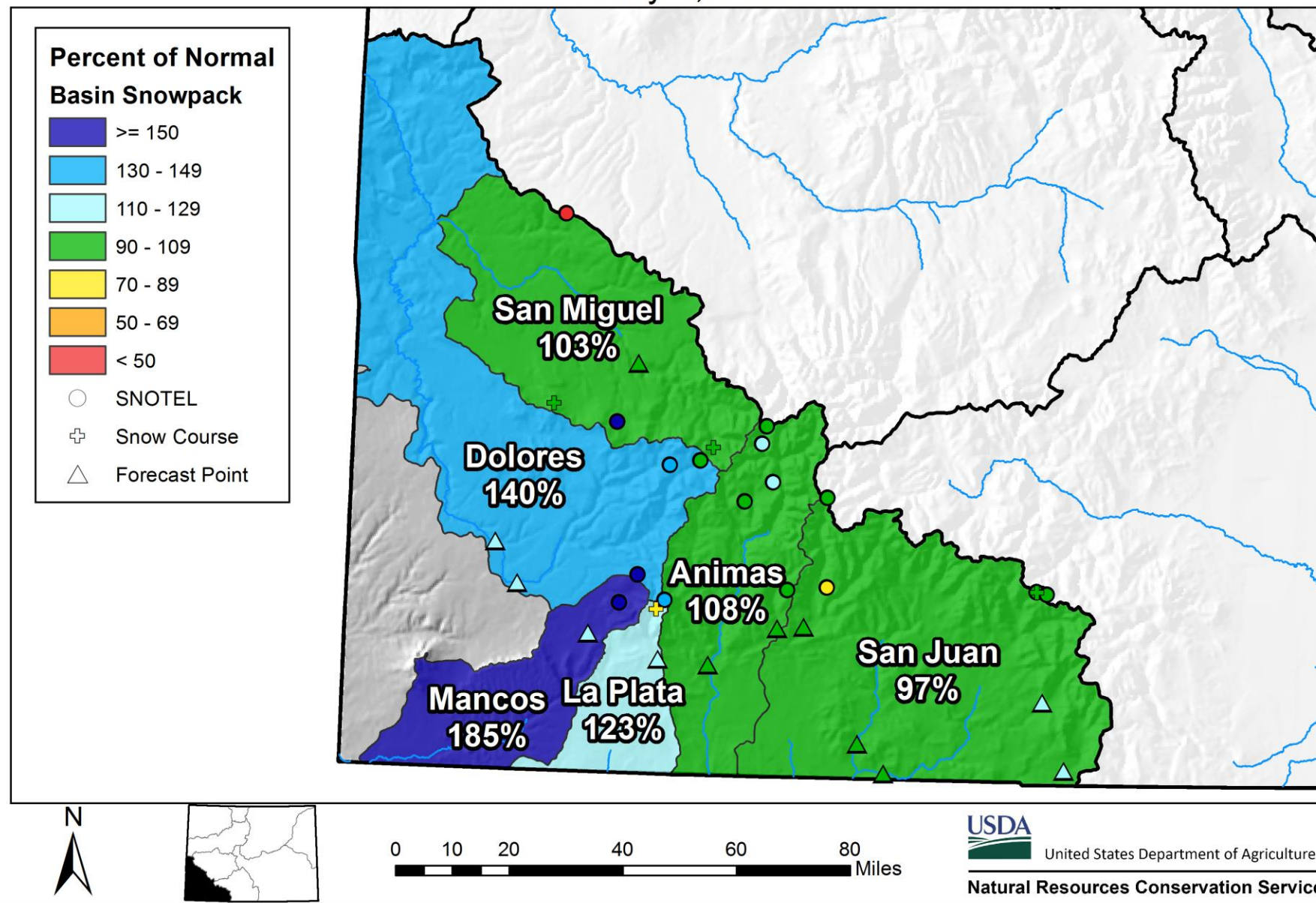
Snowpack in the combined southwest river basins is above normal at 109% of median. Precipitation for April was 55% of average which brings water year-to-date precipitation to 109% of average. Reservoir storage at the end of April was 113% of average compared to 106% last year. Current streamflow forecasts range from 126% of average for the Mancos River near Mancos to 93% for the inflow to Lemon Reservoir.



San Miguel, Dolores, Animas, and San Juan River Basins

Snowpack and Streamflow Forecasts

May 1, 2017



San Miguel-Dolores-Animas-San Juan River Basins

Streamflow Forecasts - May 1, 2017

 Forecast Exceedance Probabilities for Risk Assessment
 Chance that actual volume will exceed forecast

SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Dolores R at Dolores	APR-JUL	235	265	285	116%	305	335	245
	MAY-JUL	163	190	210	105%	230	260	200
McPhee Reservoir Inflow	APR-JUL	280	310	330	112%	355	385	295
	MAY-JUL	187	215	235	107%	260	290	220
San Miguel R nr Placerville	APR-JUL	112	127	139	109%	151	170	128
	MAY-JUL	92	107	119	105%	131	150	113
Cone Reservoir Inlet	MAY-JUL	2.2	2.7	3	103%	3.3	3.9	2.9
Gurley Reservoir Inlet	MAY-JUL	10.8	13.2	15	104%	16.9	19.8	14.4
Lilylands Reservoir Inlet	MAY-JUL	1.51	2	2.4	104%	2.8	3.5	2.3
Rio Blanco at Blanco Diversion ²	APR-JUL	50	56	60	111%	64	71	54
	MAY-JUL	35	41	45	100%	49	56	45
Navajo R at Oso Diversion ²	APR-JUL	62	69	74	114%	79	87	65
	MAY-JUL	43	50	55	102%	60	68	54
San Juan R nr Carracas ²	APR-JUL	340	375	400	105%	425	465	380
	MAY-JUL	210	245	270	90%	295	335	300
Piedra R nr Arboles	APR-JUL	166	185	199	95%	215	235	210
	MAY-JUL	92	111	125	82%	140	163	153
Vallecito Reservoir Inflow	APR-JUL	168	183	193	99%	205	220	194
	MAY-JUL	123	138	148	87%	159	175	171
Navajo Reservoir Inflow ²	APR-JUL	620	680	725	99%	770	840	735
	MAY-JUL	375	435	480	85%	525	595	565
Animas R at Durango	APR-JUL	370	405	430	104%	455	495	415
	MAY-JUL	290	325	350	96%	375	415	365
Lemon Reservoir Inflow	APR-JUL	42	47	51	93%	55	61	55
	MAY-JUL	32	37	41	84%	45	51	49
La Plata R at Hesperus	APR-JUL	23	26	27	117%	28	31	23
	MAY-JUL	16.5	18.6	20	110%	21	24	18.2
Mancos R nr Mancos ²	APR-JUL	34	37	39	126%	41	45	31
	MAY-JUL	24	27	29	121%	31	35	24

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

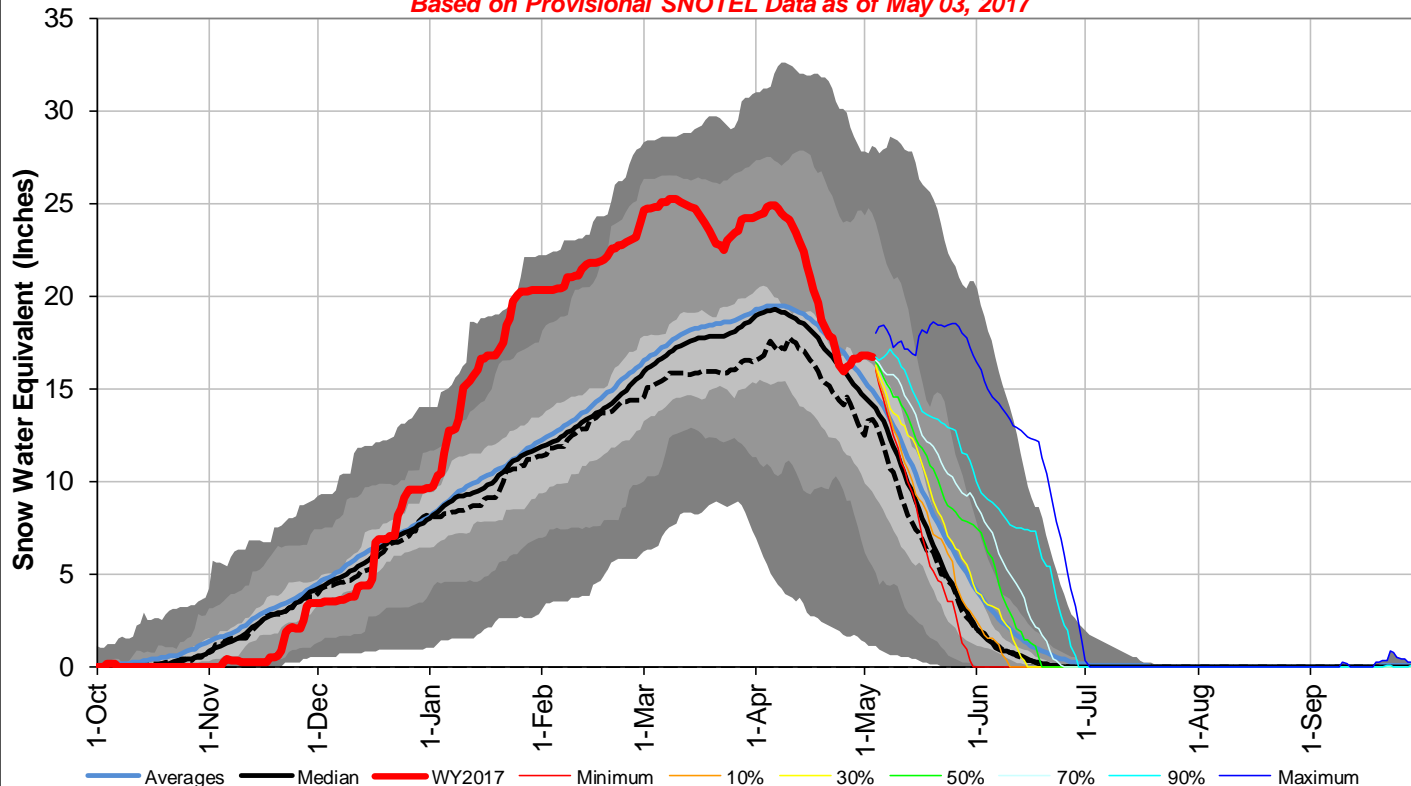
3) Median value used in place of average

Reservoir Storage End of April, 2017	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Groundhog Reservoir	23.4	24.4	14.8	22.0
Jackson Gulch Reservoir	9.8	8.7	7.5	10.0
Lemon Reservoir	26.8	27.9	24.1	40.0
McPhee Reservoir	353.2	297.7	319.4	381.0
Narraguinnep Reservoir	18.8	18.7	17.5	19.0
Trout Lake Reservoir	2.0	2.2	1.5	3.2
Vallecito Reservoir	86.5	104.9	74.2	126.0
Basin-wide Total	520.5	484.5	459.0	601.2
# of reservoirs	7	7	7	7

Watershed Snowpack Analysis May 1, 2017	# of Sites	% Median	Last Year % Median
ANIMAS RIVER BASIN	11	108%	80%
DOLORES RIVER BASIN	6	140%	104%
SAN MIGUEL RIVER BASIN	5	103%	107%
SAN JUAN RIVER BASIN	4	97%	72%
SAN MIGUEL-DOLORES-ANIMAS-SAN JUAN RIVER BASINS	24	109%	84%

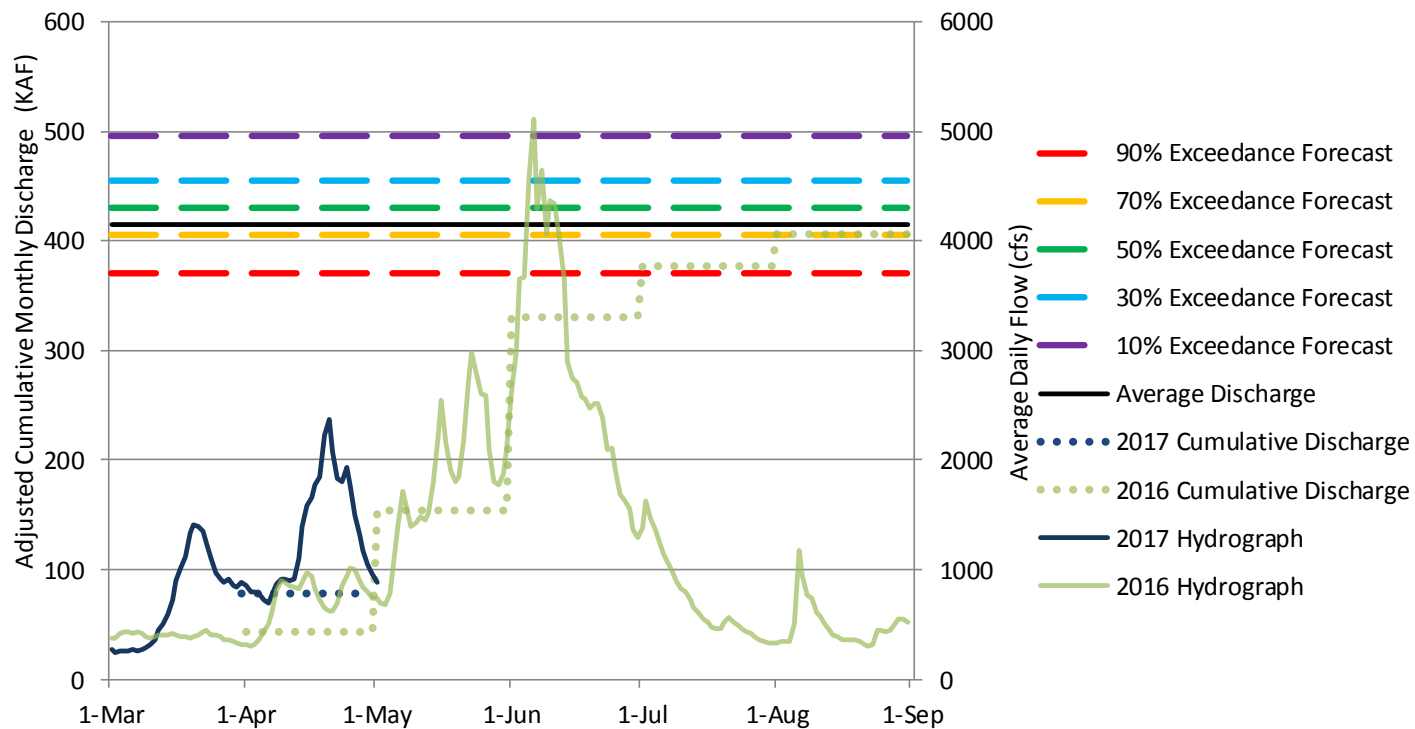
San Miguel, Dolores, Animas and San Juan River Basin with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of May 03, 2017



Animas River at Durango, CO

Daily and Cumulative Discharge Compared to Current Streamflow Forecasts (Apr - Jul)



Please refer to the sections at the end of this report for further explanation concerning these graphs.

How to Read Non-Exceedance Projections Graphs

The graphs show snow water equivalent (SWE) projections (in inches) for the October 1 through September 30 water year. Basin “observed” SWE values are computed using SNOTEL sites which are characteristic of the snowpack of the particular basin. The SWE observations at these sites are averaged and normalized to produce these basin snowpack graphs. This new graph format uses non-exceedance projections.

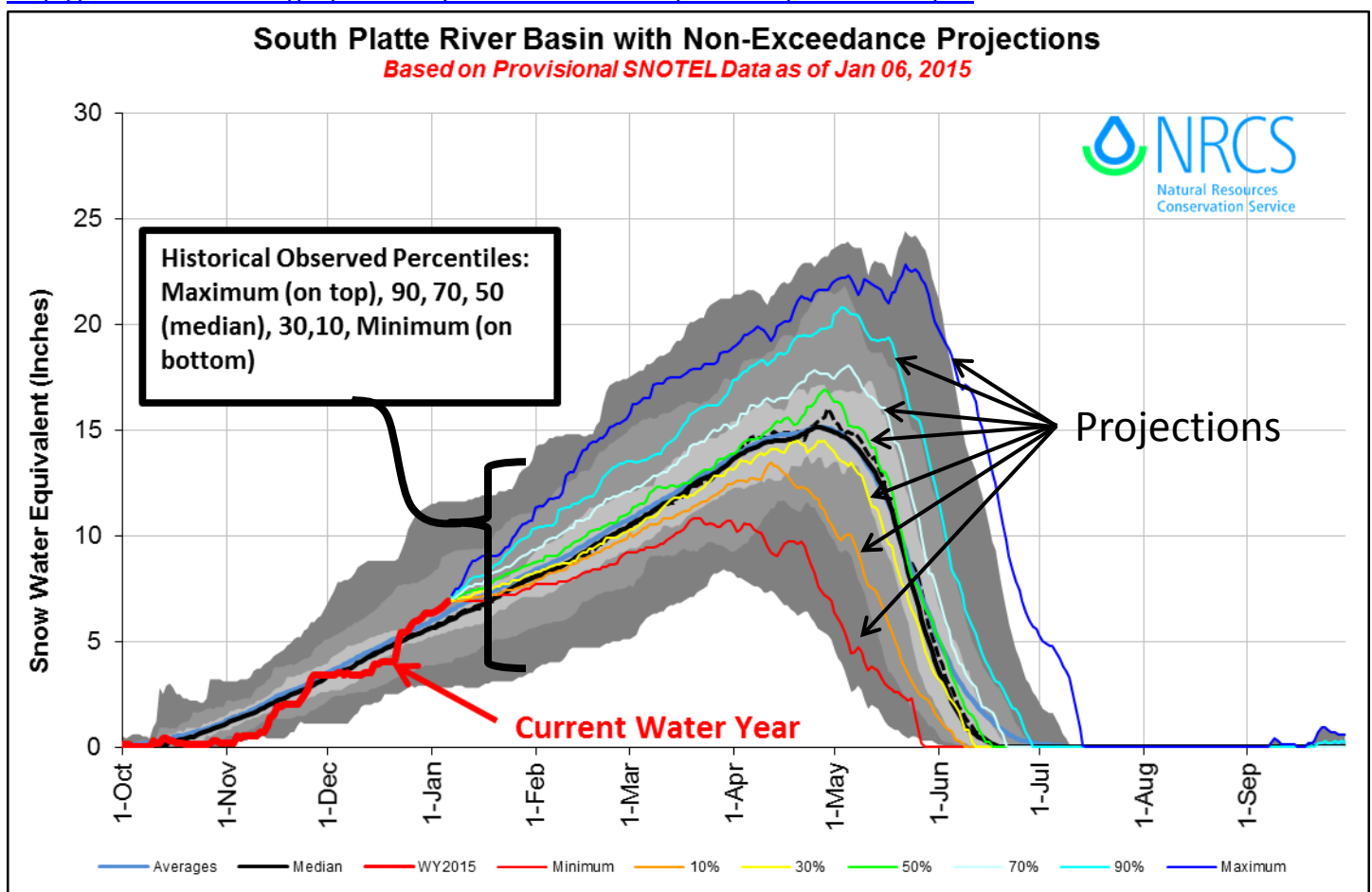
Current water year is represented by the heavy red line terminating on the last day the graphic was updated.

Historical observed percentile range is shown as a gray background area on the graph. Shades of gray indicate maximum, 90 percentile, 70 percentile, 50 percentile (solid black line), 30 percentile, 10 percentile, and minimum for the period of record.

Projections for maximum, 90 percent, 70 percent, 50 percent (most probabilistic snowpack projection, based on median), 30 percent, 10 percent, and minimum exceedances are projected forward from the end of the current line as different colored lines.

For more detailed information on these graphs visit:

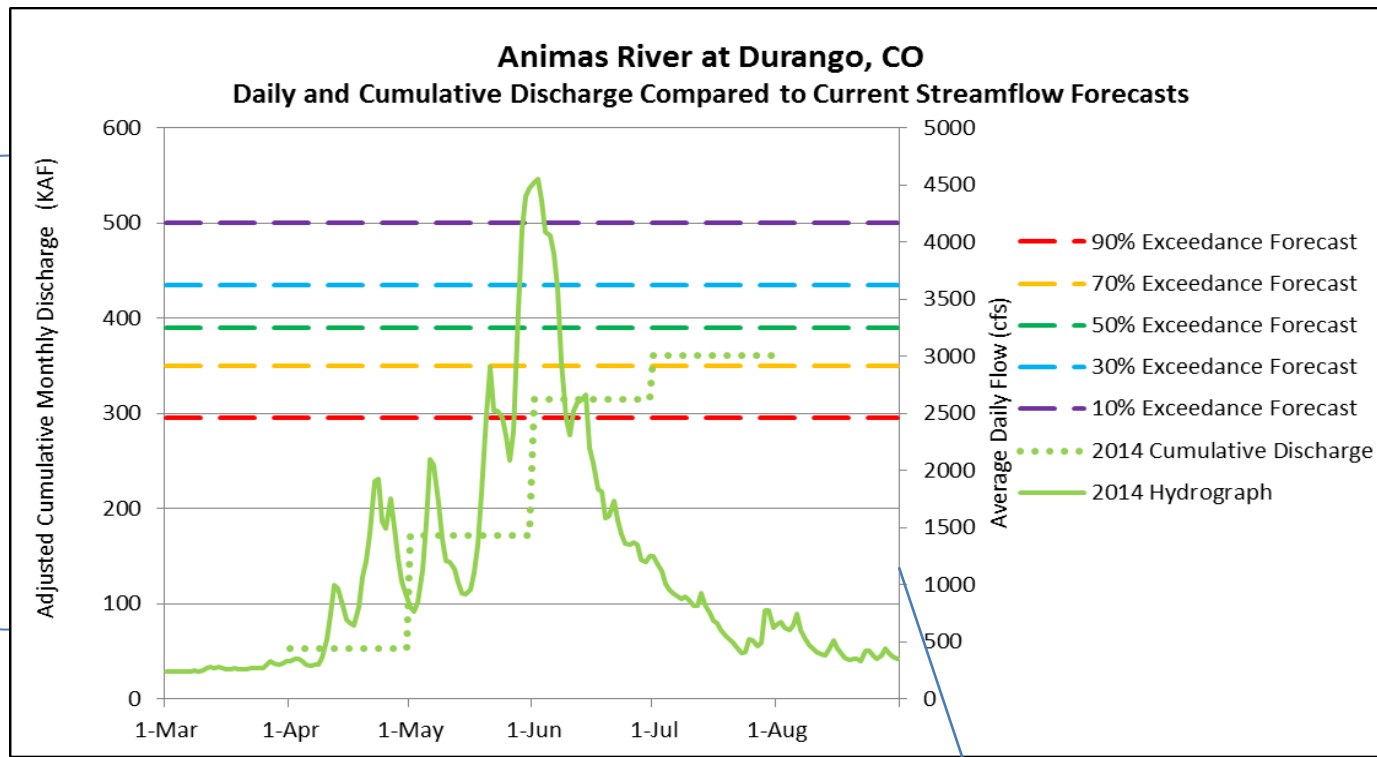
http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_062291.pdf



Explanation of Flow Comparison Charts

The flow comparison charts were developed to provide a quick comparison between the previous years' observed hydrograph, cumulative seasonal discharge, the current streamflow forecasts, and the current years' observed discharge (both hydrograph and cumulative discharge, as the season progresses). Forecast points for these products were generally chosen to be lower in the basin to best represent the basin-wide streamflow response for the season; the true degree of representativeness will vary between basins. When making comparisons of how the shape of the hydrograph relates to the monthly (and seasonal) cumulative discharges it is important to note that the hydrograph represents observed daily flows at the forecast point while the cumulative values may be adjusted for changes in reservoir storage and diversions to best represent what would be "natural flows" if these impoundments and diversions did not exist. This product can provide additional guidance regarding how to most wisely utilize the five exceedance forecasts based on past observations, current trends, and future uncertainty for a wide variety of purposes and water users.

The left y-axis represents values of adjusted cumulative discharge (KAF). This axis is to be used for comparing the current and previous years to the current five volumetric seasonal exceedance forecasts. This graphic only displays the previous years data but data for the current water year will be added as the season progresses.



The legend displays the symbology and color schemes for the various parameters represented. Exceedance forecasts represent total cumulative discharge for the April through July time period with the exception of the Rio Grande at Wagon Wheel Gap (Apr-Sep).

The right y-axis represents observed daily average discharge at the forecast point of interest. This graphic only displays the previous years data but data for the current water year will be added as the Season progresses.

How Forecasts Are Made

For more water supply and resource management information, contact:

Brian Domonkos

Snow Survey Supervisor

USDA, Natural Resources Conservation Service

Denver Federal Center, Bldg 56, Rm 2604

PO Box 25426

Denver, CO 80225-0426

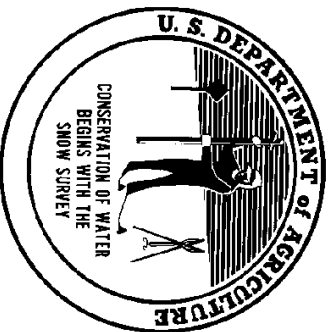
Phone (720) 544-2852

Website: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/co/snow/>

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.



Denver Federal Center, Bldg 56, Rm 2604
PO Box 25426
Denver, CO 80225-0426

In addition to the water supply outlook reports, water supply forecast information for the Western United States is available from the Natural Resources Conservation Service and the National Weather Service monthly, January through June. The information may be obtained from the Natural Resources Conservation Service web page at <http://www.wcc.nrcs.usda.gov/wsf/westwide.html>

Issued by

Jason Weller
Chief
Natural Resources Conservation Service
U.S. Department of Agriculture

Released by

Clint Evans
State Conservationist
Natural Resources Conservation Service
Lakewood, Colorado

Colorado

Water Supply Outlook Report

Natural Resources Conservation Service
Lakewood, CO